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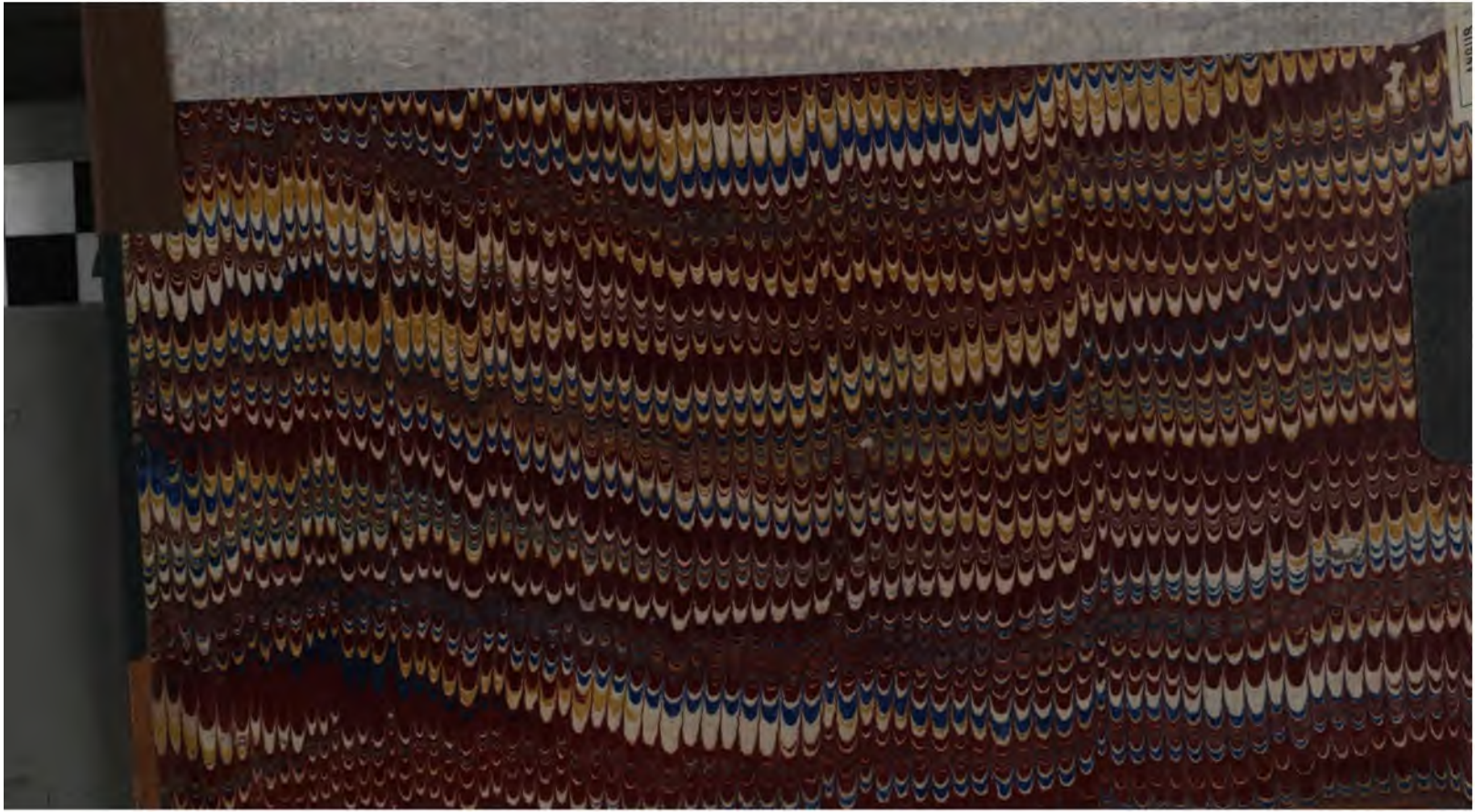

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THE PROCEEDINGS

OF THE

LINNEAN SOCIETY

OF NEW SOUTH WALES.

MONDAY, JAN. 29TH, 1877.

W. J. STEPHENS, M.A., President, in the Chair.

The following papers were read —

Continuation of the MOLLUSCA of the Chevert Expedition, by JOHN BRAZIER, C.M.Z.S., Cor. Mem. Roy. Soc. Tas.

FAMILY TURRITELLIDÆ.

1.—TURRITELLA CINGULIFERA.

Turritella cingulifera, Sowerby, Tank. Cat. App., p. 14.

„ „ Reeve, Conch. Icon., pl. 11, sp. 64.

Hab. Cape York, North Australia, 6 fathoms; York Island, Torres Straits, 11 fathoms; Darnley Island, Torres Straits, 20, 30 fathoms, white sand bottom.

FAMILY VERMETIDÆ.

2.—SIPHONIUM SP. ?

Hab. Dungeness Island, Torres Straits. One specimen found on the reefs at low water. It resembles in form *Siphonium carinatum*, Quoy.

3.—VERMETUS SP. ?

Hab. Dungeness Island, Torres Straits. One specimen found on the reefs at low water, on blocks of coral. The interior is of a light violet colour, the outside all eroded.

4.—VERMETUS SP. ?

Hab. Darnley Island, Torres Straits. Two bad specimens found on the reefs, under coral.

5.—VERMETUS SP. ?

Hab. Sue Island, Torres Straits. Found on the outer edge of the reefs at low water, in the breakers.

6.—VERMETUS SP. ?

Hab. Darnley Island, Torres Straits. Dead specimen, 7 inches long, found at 11 fathoms, sandy mud bottom.

7.—VERMETUS SP. ?

Hab. Mud Bay, Cape York, North Australia. Portion of a dead and worn tube found at 4 fathoms.

8.—VERMETUS SP. ?

Hab. Katow, New Guinea. An imperfect tube, 9 lines long, found at 6 fathoms.

9.—BIVONIA SP. ?

Hab. Darnley Island, Torres Straits. Two specimens found on the reefs under stones.

10.—CLADOPODA SP. ?

Hab. Cape Grenville, North-East Australia, 13 fathoms. One specimen, very much broken, adhering to the upper valve of *Pecten Strangei.*

11.—CLADOPODA SP. ?

Hab. Warrior Reef, West side, near New Guinea, 8 fathoms, mud bottom, adhering to a stone. One specimen found.

12.—CLADOPODA SP. ?

Hab. Darnley Island, Torres Straits, 30 fathoms, sand bottom. Two dead and imperfect specimens were found.

13.—TANGADUS AUSTRALIS.

Siliquaria australis, Quoy.

Hab. Warrior Reef, West side, near New Guinea, 8 fathoms, sandy mud bottom, Sue Island, Torres Straits, 11 fathoms, bottom of coral and sand.

14.—TENAGODUS SP. ?

Hab. Between Home Island and Cape Grenville, North-East Australia, 20 fathoms, bottom of sand, broken shells, and sponge. Specimen dead and worn, having the apex broken, 9 inches long, somewhat allied to *Tenogada anguina*, Linn.

15.—SILIQUARUS SCALARIFORMIS.

Siliquarus scalariformis, Morch, Proc. Zool. Soc., London, 1860 p. 406.

Hab. Cape Grenville, North-East Australia, 20 fathoms, bottom of sand, broken shells, and sponge. One fine specimen found.

16.—SILIQUARUS SP. ?

Hab. Warrior Reef, west side, near new Guinea, 8 fathoms, mud bottom. Half of a specimen, with the aperture and apex broken off.

FAMILY ONUSTIDÆ.

17.—ONUSTUS EXUTUS.

Phorus exutus, Reeve, Proc. Zool. Soc. London, 1842, p. 162.
„ „ „ Conch. Icon., pl. 2, sp. 7.

Hab. Darnley Island, Torres Straits, 30 fathoms, white sandy mud.

18.—ONUSTUS SP. ?

Hab. Darnley Island, Torres Straits, 20 fathoms. A small dead and worn specimen, diam. 2 lines, alt. 1 line.

19. XENOPHORA SOLARIOIDES.

Phorus Solarioides, Reeve, Conch., Icon., pl. 3, sp. 8.

Hab. Palm Island, North-East Australia, 10 fathoms, hard mud bottom, brought up on the tangles attached to the bottom of the dredge bag; Cape Grenville, North-East Australia, 20 fathoms, bottom of sand, stones, broken shells, and sponge; Darnley Island, Torres Straits, 25, 30 fathoms, sand and sandy mud bottom brought up in the dredge and on the tangles.

The shells which become agglutinated to this species are valves of *Corbula crassa*, *Venus thiara*, specimens of *Mitra*, *Cerithium*, *Columbella*, *Capulus*, *Foraminifera*, *Diatomaceæ*, shark's teeth, small stones, and pebbles.

Family CALYPTRIDÆ.

20.—Calyptræa cicatricosa.

Calyptræa cicatricosa, Reeve, Conch. Icon. pl. 1, sp. 3.

„ *sacchari-meta*, Reeve. Conch. Icon. sp. 15.

Hab. Bramble Cay, Torres Straits, one specimen found on the sands.

21.—Calyptræa aculeata.

Calyptræa aculeata, Reeve, Conch. Icon. pl. 7, sp. 31.

Hab. Albany Passage, Cape York, North East Australia, 11 fathoms, sand bottom; Katow, New Guinea, 8 fathoms, coral and mud bottom, specimens dead.

22.—Calyptræa sp.?

Hab. Cape Grenville, North East Australia, 25 fathoms, sand bottom. One specimen thin and fragile, broken.

23.—Galerus pellucidus.

Trochita pellucida, Reeve, Conch. Icon. pl. 1, sp. 2.

Hab. Cape York, North Australia, 6 fathoms, sand. Cape Grenville, North East Australia, 25 fathoms, sand bottom; Katow, New Guinea, 8 fathoms, coral and mud bottom; Port Jackson, at the Sow and Pigs Reef, sand bottom.

Family CAPULIDÆ.

24.—Capulus Danieli.

Capulus Danieli, Crosse, Revue et Mag. de Zool. 1858; pl. 3, fig. 2, 2a, 2b.

Capulus Danieli, Angas. Proc. Zool. Soc., London 1865, p. 175.

Hab. Cape Grenville, North East Australia, 25 fathoms, bottom of sand stones and broken shells; Bet Island, Torres Straits, 11 fathoms, sand bottom; St. Vincent's Gulf and Port Lincoln, South Australia, found by Mr. G. F. Angas; found also at Le Point d' Abattoir, Nouméa, New Caledonia, under stones at low water. (Brazier.)

25.—AMATHINA TRICARINATA.

Amathina tricarinata, Chemnitz.

„ „ Chenu, Manuel de Conch. part 1, p. 329, fig. 2388.

Hab. Cape Grenville, North East Australia, 25 fathoms, sand and stone bottom, three specimens found; Bet Island, Torres Straits, 11 fathoms, sand bottom.

FAMILY VANIKORIDÆ.

26.—VANIKORO CANCELLATA.

Nerita cancellata, Chemn. Conch.

Sigaretus cancellatus, Lam. Anim. Sans, Vert. tome 6, second part.

Vanikoro cancellata, Sowerby; Reeve, Conch. Icon. pl. 1, sp. 1a. 1b.

Hab. Home Islands off Cape Grenville, North East Australia, found on the reefs under coral; Darnley Island, Torres Straits, on the reefs.

27.—VANIKORO DESHAYESIANA.

Narica Deshayesiana, Recluz. Proc. Zool. Soc., London, 1843, p. 138.

Vanikoro Deshayesiana, Sowerby; Reeve. Conch. Icon. pl. 2, sp. 12.

Hab. Home Islands off Cape Grenville, North East Australia; found on the reefs under stones and coral. Nouméa, New Caledonia (Brazier.)

28.—VANIKORO CLATHRATA.

Narica clathrata, Recluz.

Vanikoro clathrata, Sowerby, in Reeve, Conch. Icon., pl. 2, sp. 14.

Hab. Albany Passage, Cape York, North East Australia, 11 fathoms, sand and stones, 2 specimens found; Bet Island, Torres Straits, 11 fathoms, sand bottom, specimens dead. Mr. Sowerby, in Reeves' Conchologia Iconica, quotes the species as being described by Recluz in the Proceedings of the Zoological Society of London for 1843; there is no mention of any such species

being described as *clathrata*. The Australian and Torres Straits specimens answer to the description and figure given by Mr. Sowerby in the Conch. Icon.

29.—VANIKORO GAIMARDI.

Vanikoro Gaimardi, H. and A. Adams.

„ „ Sowb. in Reeve, Conch. Icon. pl. 2, sp. 9.

Hab. Darnley Island, Torres Straits, 25 fathoms, sand, broken shells and coral.

30.—VANIKORO SP. ?

Hab. Off Katow, New Guinea. Half of a specimen was obtained at the depth of 8 fathoms, sandy mud bottom.

31.—VANIKORO SEMISOLUTA ?

Vanikoro semisoluta, Sowb., Reeve, Conch. Icon., pl. 3, sp. 24.

Hab. Off Katow, New Guinea, 8 fathoms. I have some doubt about this species being *semisoluta*, as the single specimen has the back broken, but what remains of the fore part answers to the description.

Description of a New Murex, collected at Port Darwin, by Mr. W. BEDNALL.

By JOHN BRAZIER, C.M Z.S., Cor. Mem. Roy. Soc., Tas.

MUREX (PTEROTUS) BEDNALLI.

Shell whitish brown, ovately oblong, three varicose, varices winged or expanded, slightly curved, dark brown, two in front with squamose ridged scales; whorls 8, convex in centre, flattened towards the suture, with a small nearly obsolete tubercule between the varices on the body whorl, the upper ones having from two to three, encircled with numerous transverse ridges, interstices with minute striæ, spire accuminately lengthened, varice on columella side, small and curved below, tipped with brown; aperture ovately oblong, white within, lip rather thickened internally, and expanded outwardly into a broad varice deeply grooved at the edge, turned back at the lower part, leaving a passage between the recurved canal, which is long, and rather wide.

Young Shell, ovately fusiform, light reddish or flesh colour, having on the body whorl four nodules, the upper whorls with three varices squamose, with two dark brown spots on each, varice in front thickly squamose, aperture milk white, having at the edge of the lip eight small denticulations.

Length 36, breadth 23, alt. 17 lines.

Hab. Port Darwin, North Australia.

I have named it after its discoverer, Mr. William Bednall, of South Australia, who collected it some eighteen months ago, at the locality given above.

Allied to *Murex eurypteron*, Reeve, and *Murex expansus*, Sowerby, but differs from both in every respect.

ZOOLOGY OF THE "CHEVERT."

By E. P. Ramsay, F. L. S.

MAMMALS.

Part I.

Sub Order CHIROPTERA.

Family PTEROPIDÆ.

Sub Family PTEROPINÆ.

FRUIT-EATING BATS.

1. Pteropus conspicillatus, *Gould, P.Z.S.* 1849, *p.* 109. *The Spectacled Kalony, id*; *Mamm. Aust. III.. pl.* 29.

The collection contains a fine series of this beautiful species, varying little in size or markings, the largest adults being 18½ inches in total length, the smallest 16½ inches, the wing bones respectively 7 inches and 6·2. The yellow collar on the upper part of the back, the neck and the nape, is of a slightly deeper tint, tinged with reddish in the central portion, and *unctuous in the males;* the hair on this part is stiffer, rather pressed, and the individual hairs wavy. The coloring of the orbits is more defined and paler in some than in others.

Localities: Rockingham Bay, Queensland; and Yule Island, New Guinea.

2.—Pteropus funereus, *Temm.*

The Red-naped Kalong.

The males, as in this sex in the preceding species, have the hair on the nape stiff and unctuous; the females have not this peculiarity, and the nape band instead of being stiff, compressed, and of a greasy feeling, is soft and rather spreading; it varies from deep yellowish red to very deep blackish tan-red.

Average size 14 inches. This species was observed in countless numbers towards dusk, flying from the mainland to islands in the Straits, and in the early part of the morning, at break of day, they returned on their way to the scrubs. During the month of August, many of the females shot had young of considerable size attached to the breasts.*

Localities: Cape York and Bet Island.

3.—Pteropus (*Epomops ?*) epularius, *sp. n.*

Adult Male.—To all intents this species is a true Pteropus, differing only in having two large unctuous, brush-like tufts of stiff hair on the side of the chest, just above the junction of the wing membrane with the body. Total length, 13·5 inches; forearm, 5 inches; index finger, 1·36 inches; legs, from knee joint, 3 inches; thumb, first joint small, hidden in the membrane, 0·5 inch; last joint long, slender, free, 1·4 inches; its claw 0·7 inch, round the curve 0·85 inch; femur 3 inches, legbones 3·2 inches; ears long, pointed, length 1 inch, breadth 0·65 inch; skull 2·6 inch, from nose to eye 0·8 inch, to the base of the ear 1·1 inch; breadth across zygomatic arch, 1·3 inches; orbits incomplete,† round; internal diameter, 0·5 inch; arch behind the orbit very convex, length 0·7 inch, greatest width 0·15 inch, from anterior margin of the orbit 1·2 inches; the skull is almost flat between the orbits, and in width at this part 0·3 inch; between the intraorbital foramena, 0·3 inch; the brain case rather elongate, without any ridge, swollen, rounded posteriorly; greatest width, 0·95 inch; length, about 1·3 inches (base cut away); length from the incisor teeth to base of the skull,

*From Mr. G. Master's notes.

† In all four specimens examined the orbits are incomplete, although the animals are apparently fully adult, the space is 0·15 inch wide, the diameter of the orbit being 0·5 inch.

about 2·6 inches; distance from incisor teeth to base of last molar, 1·05 inches; to anterior margin of orbit, 0·85 inches. Teeth, incisors $\frac{2}{2}\cdot\frac{3}{3}$, strong and even, not crowded; canines $\frac{1}{1}\cdot\frac{1}{1}$, the upper large, strong, length 0·3 inch; premolars, $\frac{2}{3}\cdot\frac{2}{3}$, the upper 1st, minute, at the base of the canine, the 2nd upper large, compressed anteriorly; the 1st lower distinct, about the size of the last upper molar, the 2nd large and strong; molars $\frac{3}{3}\cdot\frac{3}{3}$, the last above, small; the last below smaller. The wings are attached to the first joint of the second toe and to the sides of the back; the interfemoral membrane extends to the ankle; penis bone short, thick, length 0·3 inch; the snout, lips, and chin blackish, nearly bare, with a few scattered, long black hairs on the face; the throat and sides of the jaws below and the chest black; breast and all the under surface blackish chocolate-brown, soft, and cottony; the back above blackish-brown; the hair close-pressed, silky, in a narrow strip down the centre of the back, widening on the rump and extending to the knee-joint and inner part of the interfemoral membrane where the hair is longer; the legs and membrane from the knees bare to the ankles; a strong sinew from a little (0·4 inch) above the ankle-joint to the margin of the interfemoral membrane. Wings, above naked, except a narrow strip of reddish hair along the humerus; below they are sparingly clothed, with rather long silky hair along the sides of the arm bones and below the elbow joint, reaching nearly to the knees. The face and upper parts of the head are dark chocolate-brown, extending round the base of the ears, and in some specimens in a triangular or irregular patch down the occiput; the nape from the base of the ears, the back and sides of the neck and upper part of the back itself, are of a yellowish tint; on either side of the neck, near the chest, is a round brush-like tuft of stiff yellowish brown, unctuous hair, and between these tufts is a broad band, extending round the back of the neck, of harsh, unctuous hairs directed backwards, of a deep yellow tint in some, in others of a dull yellowish brown; these hairs are individually flattish and twisted and are found only in the male.

Adult Female.—In coloration similar to the male, but without the unctuous tufts or band of hair; the hair of the nape is silky, rather spreading, of a deeper tint on the central portion than that on the sides.

Total length, 12·3 inches; forearm, 5·5 inches; thumb, first joint 0·45 inch, last 1·3 inches; index finger, 3·5 inches.

In the shoulder or neck tufts of unctuous hair, this species comes near to *P. molossinus*, of Temminck, Esq. I have learned from Mr. Masters, that it was found in large numbers clustering on the leaves of a Nipa palm *(N. fruticans)* overhanging the water. Their discovery was due to the fetid odour which pervaded the place.

Hab. Katow, New Guinea.

Tribe MACROGLOSSINA.

Long-tongued Bats.

4.—Macroglossus minimus.

The Kiodote.

Pteropus minimus, *Geoff. Ann. Mus. XV. p.* 535.

Pteropus rostratus, *Horsf. Z. Java, t.*

One specimen of this very interesting and widely-distributed species was obtained at Katow, hanging among the leaves of some vines. The tongue is very exsertile and covered at the tip with a brush of flattish, pointed, hair-like papillæ.

VESPERTILIONES.

Insectivorous Bats.

5.—Taphozous Australis, *Gould. Mamm. of Aust. Vol. III, p.* 32, *pl.* 32.

The North Australian Cave Bat.

A fine series of this interesting bat was obtained, varying considerably in color and in the length of the free portion of the tail, and in all the males the gular pouch is largely developed. These specimens were obtained at Cape York from caves in the rocks on the coast. The range of this species extends as far

south as Bowen, Port Denison, and to the Norman River and Gulf of Carpentaria. Four species of this genus are known to inhabit Australia.

Order MARSUPIALIA.

Family MACROPODIDÆ.

6.—Macropus (*Heteropus*) assimilis, *Ramsay.*

Petrogalea assimilis, *Ramsay, Proc. Linn. Soc., N. S. Wales, Vol. I., pt. IV., p.* 360.

The Allied Brush-tailed Kangaroo.

Two specimens only of this new species were obtained, an adult and young. The fur of the younger animal is of a beautiful silky texture, long and very soft; the basal portion is of a dark brown, the tips of the hairs silvery grey, rufous on the sides of the base of the tail.

The locality is the Palm Islands, off Cleveland Bay.

Family PHALANGISTIDÆ.

7.—Cuscus maculatus, Less.

Cuscus maculatus ochropus, *var. P.Z S.*, 1866, *p.* 220.

Several specimens from Cape York.

It is not improbable that the females of this species have been mistaken for that described by Temminck as *C. chrysorrhous.*

I believe the males are always whitish, spotted or irregularly blotched, with some shade of brown, the tail always more rough or tuberculate underneath. The female is of a more uniform dark brown, the tips of the hairs ashy grey or silvery, and the rump and tail yellowish; a whitish stripe from the throat, widening between the arms, narrower just below them, and becoming very much wider over the belly, where it is separated from the grey of the back by a narrow stripe of black on either side opposite the pouch, from the pouch downwards, and the tail whitish or yellowish white. The feet are in all I have examined more or less rufous or reddish yellow. On this Dr. G. R. Gray founded his variety *C. ochropus.*

8.—Cuscus brevicaudatus. Gray.

Phalangista nudicaudata, *Gould, P.Z.S.*, 1849, *p.* 110.

Only one specimen, a young male. It is of a light cream color or white, with the face yellowish, and a tinge of yellow on the back; the body and legs irregularly blotched with brown, the tips of the hair on most of the brown spots on the back yellowish, hands and feet tinged with yellow, the tail comparatively short; total length, 25 inches to the tip of the tail; the tail, 10 inches; from the nose to anterior base of the ear, 2·7 inches; to the eye, 1·1 inches; width of the *two lower incisors* together, 0·3 inch; skull, 3·2 inches.

9.—Phalangista pinnata.

Adults and young of this pretty species were obtained on the Ethel River, New Guinea; the young resemble the adults; the white stripe down the forehead, however, is proportionately broader.

Family PETAURISTIDÆ.

The Flying Phalangers.

10.—Belideus Ariel, *Gould, Mamm. Austr. Vol. I., pl.* 27.

This species was obtained at Katow, and is also found at Port Moresby. Its range extends from Cape York over the whole of New Guinea, as far as is yet known, and I have examined authentic specimens from New Britain without finding any differences between them. I believe this is the only species of this genus yet found in New Guinea.

Fam. PERAMELIDÆ.

Bandicoots.

Perameles macroura *var.* torosus.

The Tawny-Throated Bandicoot.

Fur rather long, spiny, pencilled with deep yellow and black on all the upper parts and sides of the body, lower part of the sides, and all the under parts whitish except the chin, the throat

and the chest to between the fore legs, where it is washed with tawny; fore legs and feet above light tawny or yellowish, below yellowish white; hind feet white, the heels brownish, thighs pencilled like the body, whitish on the inner side; tail less than half the length of the body and head, whitish below, dark brown above. The ears moderate, rounded, covered with soft dark brown hair without, lighter on the margins, whitish within. The under fur is soft and short, not plentiful, brownish on the back, lighter on the sides, and whitish on the under parts of the body. The spiny, flat, grooved hairs on the back are barred with black and yellow, in about equal proportions, some with black tips and yellow in the middle, others *vicé versa;* all whitish near the root; on the rump the yellow predominates, on the forehead the black-tipped hairs; these spiny hairs are continued on the face and base of the tail; on the latter part they are less spiny and more roundish in form; the hair is close pressed and continued to the tip of the tail; on the belly and under parts the hairs are uniform, whitish.

Total length from tip of nose to tip of the tail, 21·5 inches; tail, 6·3 inches; from tip of nose to anterior base of ear, 3·2 inches; from tip of nose to anterior margin of eye, 2 inches; ear in length 1 inch, in width about middle, 0·6 inch; length of fore foot and nails 1·6 inches, length of longest toe-nail 0·6 inch; hind foot and nails 3·1 inches, length of the longest toe-nail 0·6 inch; distance between the posterior incisor and canine, 0·11 inch; between the canine and first premolar, 0·12 inch; from anterior of foremost incisor to the first true molar, 1·2 inches; from tip of snout to front incisor, 0·45 inch.

Hab. North-Eastern Queensland, Rockingham Bay, to the Endeavour River. The present specimen was obtained near Cooktown.

This is one of the largest species of *Perameles* known, being about the same size as *P. nasuta*, to which it assimilates on the whole, but differs considerably in detail. The hair is spiny, both above and below, with a strong admixture of bright *deep yellow* and *black* on the upper parts, while the spiny hairs of the under

portion of the body are altogether whitish. The ears are compressed, rounded, short, and comparatively small for the size of the animal. The throat and chest are tinted conspicuously with light tawny. The nose is much shorter, the canines are nearer to the premolars, and the incisors closer to the canines than in *P. nasuta*. The under side of the tail is uniform whitish, and the upper, dark brown to the tips. Lastly, there is no shade of purple on any part of the body.

It may be distinguished from *Perameles macroura* by the tawny throat and chest, and much whiter under surface, and is altogether a very heavily built animal. In size it is equal to *P. macroura* of Gould.

For the present I prefer to place the specimens, showing these peculiarities, as a *variety* of *P. macroura*, rather than create a new species.

PERAMELES, MORESBYENSIS, *sp. nov.*

The Port Moresby Bandicoot.

The head is conical, the snout long, thin, and pointed, the ears large, rounded, almost as broad as long, the tail moderate, about half the length of the body without the head, the legs moderate. The hair is harsh and stiff, almost spiny, the inner fur soft and uniform. The general color above is dark brown, pencilled with deep bright rusty yellow and black, some of the hairs yellow, others black, or black with the anterior half yellow, the basal portion whitish, and, like all of the group, flat and grooved. The sides and rump a little more yellowish; the belly, chest, and throat whitish, with stiff white hairs; the under fur short and soft, of a dark and ashy brown, only slightly lighter on the sides, and ashy on the belly; the head is blackish, pencilled with light brown, and ashy on the sides of the face; the ears brown (*in one yellow*) without, yellowish within, clothed with very short soft hair; the tail dark brown above, whitish below, sparingly clothed with short adpressed hair, scaly, and becoming bare towards the tip; feet ashy white.

Total length from tip of nose to the tip of the tail, 16·5 inches; tail, 5 inches; head, about 3 inches; from tip of nose to anterior margin of the eye, 1·7 inches; from tip of nose to anterior base of the ear, 2·9 inches; fore foot and nails, 1·3 inches, last joint of the longest toe and nail, 0·8 inch; hind foot and nails from heel, 2·5 inches, last joint of longest toe and nail, 1·1 inch. Teeth as in *P. nasuta*, but closer together; from front of incisors to canine, 0·4 inch; from canine to first true molar, 0·5 inch; from front of incisors to first true molar, 1 inch; distance between the last (large) incisor and canine, 0·03 inch; length of canine, 0·2 inch; the canine and 3rd premolar in the lower jaw about equal in shape and size, conical compressed, if anything the premolar is slightly larger. The animal examined is full grown, but young, with the four true molars developed.

TEETH.

Incisors ...	...	$\frac{2\text{-}2}{3\text{-}3}$	Canines	...	$\frac{1\text{-}1}{1\text{-}1}$
Premolars	...	$\frac{3\text{-}3}{3\text{-}3}$	Molars	...	$\frac{4\text{-}4}{4\text{-}4}$

This species comes near to *P. obesula*, being slightly stiffer in the hair than that species, but much less stiff than *P. Cockerellii*, from New Ireland, which has the greater part of the hair black, and sufficiently spiny to penetrate the skin if roughly handled, moreover in *P. Cockerellii*, the space between the last incisor and canine is fully twice as wide as it is in the present species.

Descriptions of two supposed *new species* of *Mus* and of a *Pteropine Bat*, of a *new genus*, from the Duke of York Island, by E. P. Ramsay, F.L.S.

MUS.? ECHIMYOIDES, SP. N.

Incisors, $\frac{1\text{-}1}{1\text{-}1}$; molars, $\frac{3\text{-}3}{3\text{-}3} = 16$.

Total length from tip of nose to the root of the tail, 5·5 inches; tail 4·6 inches, head about 1·5 inches (base cut away), ears 0·65 inch, breadth 0·4 inch; from the tip of nose to eye, 0·5 inch; from the tip of nose to base of the ear, 1·25 inches; fore foot and nails, 0·5 inch; hind foot and nails, from heel, 1 inch; the snout is rather short, the head elongate and narrow; general color, dark

brown, pencilled with black and rusty yellow on the back; the sides lighter; chin, throat, the under side of the fore and hind legs and abdomen grey or ashy white; fore and hind feet whitish, with a narrow line of brown down the front on the upper side; ears comparatively large, margins thickened and turned in at the base in front, very much rounded, broad, length 0·65 inch, breadth 0·4 inch, apparently bare, brownish without, whitish within; tail almost naked, scaly, sparingly clothed with minute spines. The fur is of two kinds at least—on the upper parts covered with stiff, flat, grooved spiny hairs, grey or ashy at the base, black at the tip, and intermixed with a fine fur of a similar tint at the base, but tipped with rusty yellow, the combination giving a dark brown upper surface finely pencilled with black and yellowish; on the sides the spines are not so numerous as down the centre of the back, and on the limbs apparently absent; on the head they are reduced to stiffish flat hairs, the fur predominating; the sides of the head of a lighter brown, and tinged with yellowish about the base of the ears below; on the belly and under surface, the spines are weaker, altogether whitish, and mixed with more fur of an ashy tint; whiskers from the upper lip only, long, black, or with a few of a whitish color.

Hab. Duke of York Island.

The young do not differ in coloration from the adults; sexes alike in color. I have no opportunity at present of examining and comparing the skull of this species, and shall consequently postpone the description of it for another paper.

Mus mùsavora, sp. n.

The "Banana Rat."

The general color of this species is light rufous or faint tawny above, the tips of some of the longer hairs being blackish on the back, but not conspicuously so; the concealed portion of the fur is dark-bluish slate color; the rufous tint is more clear on the sides, shoulders, fore arms and hind legs, all the under surface uniform white with a faint tinge of rufous towards the sides;

the feet and hands pale buff; the head and face have a greyish tinge, the chin and throat white; whiskers very long, those from the side of the snout black, a few of the lower ones white, a few long hairs from over the eye and between it and the ear; the hind feet are very broad, the toes with strong compressed nails, the inner toe nearly equal to the outer, the centre three equal and longer; the tail is blackish, quite naked; the scales roundish, tubercular; the fur is abundant, close, even, and soft, almost erect above, rather adpressed on the belly; ears moderate, rounded, broad, naked, except at the base where the front margin is turned in. Total length to root of the tail, 6·7 inches; tail, 3·8 inches; distance from tip of nose to eye, 0·8 inch; distance from tip of nose to ear, 1·35 inches; ears, length 0·6 inch, breadth 0·4 inch; fore foot and nails, 0·65 inch; hind foot and nails from heel 1·2 inch; breadth 0·35 inch.

TEETH.

Incisors ... ... $\frac{1\text{-}1}{1\text{-}1}$ Molars... ... $\frac{3\text{-}3}{3\text{-}3}$

Distance from anterior margin of upper incisors to first molar, 0·5 inch; length of the three upper molars, 0·29 inch; distance from the front of the incisors to the first molar in the ramus, 0·28 inch; total length of the skull, 1·4 inch; width 0·6 inch; zygomatic arch concave, length 0·6 inch, rather flattened laterally; width of skull between the orbits, 0·24 inch; palatal openings equidistant between inner edge of incisors and molars, slightly arched, length, 0·2 inch; width, 0·1 inch.

Hab. Duke of York Island.

This species was found plentiful on the Duke of York Island, feeding on the Plantain. The body is full, and rather heavily made, the limbs short and thick, the hind feet rather long and broad. The young and both sexes are alike in coloration.

PTEROPUS (*Cheiropteruges*), ALBOSCAPULATUS SP. NOV.

The fur is soft and abundant, rather long on the lower part of the back, cottony on the abdomen; the whole of the upper surface of the body, from between the ears to the ankles, and the sides of the neck rufous, darker on the legs and intrafemoral

membrane, which is hairy, except a small portion next the heel; wings from the base of the middle toe, hairy on the margins next the body and along the arm as far as the elbow; membrane of a purplish brown, spotted with irregular rufous brown markings, numerously along the arms, sparingly on the phalanges; a small conspicuous spot of pure white on the hairy portion of the wing membrane, at its junction with the body on either side, just in front of the humerus. Head dark brown, varied with white on the crown; a white mark down the forehead on the snout; margins of the lips and chin whitish; sides of the face, round the eyes to the ears in front, dusky or dark brown, extending on to the throat; all the under surface ashy, the base of the fur being dark brown or dusky, and the tips whitish; tail none; the intrafemoral membrane lost on the sides, about the middle of the femur. The fur on the sides of the throat is directed outwards and downwards, and meeting the rufous fur of the upper surface, which is directed forwards and downwards from the back of the neck over the shoulders, forms a ridge on the sides of the neck, reaching from the wing membrane to the lower base of the ear; the fur on the back of the neck is erect. Ears reddish, naked; nostrils blackish. The first joint of the thumb enclosed in membrane, the last free, long and slender, with its claw more than three times the length of the first joint. Wings from the sides; forearm, 2·5 inches; index finger and claw, 1·9 inch; 2nd finger 4·85 inches; 4th finger, 3·4 inches; thumb, 1st joint 0·24 inch; 2nd joint, 0·6 inch, its nail, 0·2 inch; expanse of wings, 16·5 inches; hind leg and foot with claws, 2·5 inches; ears rounded, moderate, length 0·5 inch; width 0·4 inch. *Teeth*, incisors $\frac{4}{4}$:$\frac{4}{4}$, minute, the upper ones far apart. *Canines* $\frac{1}{1}$:$\frac{1}{1}$, the upper very long pointed, somewhat squarish on the front and outer side, grooved, projecting below the lower jaw when it is closed, length, 0·25 inch; the lower ones not so long, strongly ridged towards the base. *Premolars* $\frac{2}{3}$:$\frac{2}{3}$, the first above minute (*deciduous*), almost hidden at the root of the canine; the second conical, compressed, about the middle of the space between the canine and first molar; below they are distinct, even, tubercular, the first placed close to

the lower canine, the 2nd apart about 0·15 inch from 1st; the 3rd not so far, about 0·1 inch from the 2nd, and near but separate from the molars. *Molars*, $\frac{4}{5}$-$\frac{4}{5}$, those in the upper jaw close together, small, the 1st the largest; those in the lower jaw smaller (?) tuberculate, close.

Total length from tip of nostril to the hind toe nails, 6 inches; distance from tip of nose to eye, 0 55 inch; distance from tip of nose to base of ear in front, 1·2 inch; from front of incisors to 1st true molar, 0·4 inch; extent of the three lower premolars, 0·3 inch.

Sex. Male.

I know of no genus in which this species may be placed with any degree of certainty; it, however, comes on the whole nearest *Pteropus* or *Spectrum*, but agrees strictly with neither. I therefore propose for it the generic name of *Cheiropteruges*.

EXHIBITS.

Mr. Ramsay exhibited the new Mammals described in the foregoing papers, and also some skins of interesting birds obtained by Dr. Mackinlay, of H.M.S. "Nymphe," from the Auckland Islands, among which were a species of duck, *Nessonetta aucklandica*, G.R.Gr., with remarkably short wings, belonging to the subfamily Eurysmaturinæ; A. Snipe, *Gallinago aucklandica*, and a small variety of the "Parson bird" of New Zealand, *Prosthemadera novæ-zælandiæ;* also, *Melidora goldiei*, described at last meeting, and a nestling of *Athene sp.*, both from Port Moresby.

MONDAY, 26TH FEBRUARY, 1877.

W. J. STEPHENS, M.A., President, in the Chair.

DONATIONS.

I. Proceedings of the "Entomological Society of Belgium," Series II., No. 31.

II. Papers and Proceedings of the "Royal Society of Tasmania, for 1875."

PAPERS READ.

Continuation of the Mollusca collected during the Chevert Expedition—by JOHN BRAZIER, C.M Z.S., Cor. Mem. Roy. Soc., Tasmania.

ORDER SCUTIBRANCHIATA.

SUB-ORDER PODOPHTHALMA.

FAMILY NERITIDÆ.

1.—NERITA FUNICULATA.

Nerita funiculata, Reeve, Conch. Icon., pl. 2, sp. 9.

Hab. Darnley Island, Torres Straits, found on the reefs under coral.

2.—NERITA RUMPHI.

Nerita Rumphii, Recluz, Revue, Zool. Soc. Cuv., 1841, p. 147.

Hab. Cape Grenville, North East Australia, found on the rocks at low water.

3.—NERITA ANTIQUATA.

Nerita antiquata, Recluz, Revue, Zool. Soc. Cuvierienne, 1841, p. 106.

Nerita antiquata, Reeve, Conch. Icon , pl. 2, sp. 5.

Hab. Darnley Island, Torres Straits. Found on the reefs.

4.—NERITA (THELIOSTYLA) ALBICILLA.

Nerita albicilla, Linn. Gmel., p. 3681, No. 45.

„ „ Lam. Anim. Sans. Vert., Tome 6, part 2, p. 192.

„ „ Reeve, Conch. Icon., pl. 15, sp. 64, a, d.

Hab. Darnley Island, Torres Straits, found on the reefs ; Vaucluse Point, Bradley's Head, and Point Piper, Port Jackson, New South Wales. (Brazier.)

5.—NERITINA TURRITA.

Nerita turrita, Chemn. Conch., f. 1085.

Neritina strigilata, Lam. Anim. Sans. Vert., Tome 6, part 2, p. 187.

Neritina turrita, Sowerby, Thes. Conch., Vol. 2, p. 539, pl. 112, fig. 113, 114.

„ „ Reeve, Conch. Icon., pl. 7, sp. 31, a, b.

Hab. Ethel River, Hall Sound, New Guinea.

6.—NERITINA GAGATES.

Neritina Gagates, Lam. Anim. Sans. Vert., Tome 6, part 2, p. 185.

„ „ Sowerby, Thes. Conch., Vol. 2, p. 537, pl. 112, fig. 103.

Hab. Katow River, New Guinea, found on the roots of trees and on floating timber.

7.—NERITINA MERTONIANA.

Nerita Mertoniana, Recluz, Proc. Zool. Soc., London, 1843, p. 71.

Neritina Mortoniana, Recluz, Journal de Conch, 1850, p. 152.

„ *Mertoniana*, Sowerby, Thes. Conch., Vol. 2, p. 534, pl. 116, fig. 242, 245.

Hab. Palm Island, North-east Australia, found on sandy mud flats at low water; also, quite common on the main land of the North and North-east Coast of Australia. The varieties are countless.

8.—NERITINA (VITTA) RANGIANA.

Neritina Rangiana, Recluz, Rev. Zool., 1841, p. 339.

„ „ „ Journal de Conch., 1850, p. 15.

„ „ Sowerby, Thes. Conch., Vol. 2, p. 532, pl. 116, fig. 227, 228.

Hab. Darnley Island, Torres Straits, 25, 30 fathoms, white sand bottom, Port Jackson, and Aneiteum, New Hebrides.

9.—NERITINA (VITTA) PULCHERRIMA.

Neritina (Vitta) pulcherrima, Angas, Proc. Zool. Soc., London, 1871, p. 19, pl. 1, fig. 25.

Hab. Cape Grenville, North-east Australia, 20 fathoms, sandy mud bottom, one specimen found; Evans' Bay, Cape York, North Australia, 7 fathoms, sandy mud bottom, six specimens found;

Darnley Island, Torres Straits, 5, 10, 15, 20, 30 fathoms, bottom of mud, sandy mud, and white sand, two hundred specimens found. The type specimens were dredged by me at the "Sow and Pigs" reef, Port Jackson, in 1870, and described as above, and deposited in the British Museum by Mr. G. F. Angas, F.L.S., F.R.G.S. Species rare in Port Jackson.

10.—Neritina (Vitta) Siquijorensis.

Nerita Siquijorensis. Reeluz. Proc. Zool. Soc., London, 1843, p. 198.

Neritina Siquijorensis, Sowerby, Thes. Conch., Vol. 2, p. 510, pl. 113, fig. 145, 146.

Hab. Hall Sound, New Guinea, one dead specimen found on the beach at the mouth of the Ethel River.

11.—Neritina (Dostia) crepidularia.

Neritina Crepidularia, Lam. Anim. Sans. Vert., Tome 6, part 2, p. 186.

„ „ Sowerby, Thes. Conch., Vol. 2, p. 509, pl. 113, fig. 139, 140.

Hab. Katow River, New Guinea, found on trees and roots.

12.—Neritina (Neripteron) marmorata, n. sp.

Shell transversely oval, thin, transparent, minutely decussated, with fine striæ, horny brown, rayed and reticulated with white; quadrately winged at the upper part, rather sharp, spire obliquely turned in, inner lip oblique, columella area rather large, smoky brown, minutely granulated, interior of aperture light brown, margin of the lip continuous across the spire. Length 7, breadth 5¼, alt. 3¼ lines.

Hab. Katow River, New Guinea, found 10 miles up the river on the roots of trees.

This species, when the epidermis is removed, shows fine violet reticulated markings very much after the style of *Catillus porcellanus*, Linn.

Family TROCHIDÆ.

Sub-family EUTROPIINÆ.

13.—Eutropia variegata.

Phasianella variegata, Lam. Anim. Sans. Vert., Tome 7, p. 53.
„ „ Chenu, Manuel de Conch., Tome 1, p. 343, fig. 2527.

Hab. Cape York, North Australia, 11 fathoms, sand bottom, Wantoro Bay, near Nouméa, New Caledonia. Found in great quantity crawling on the sand beaches at the edge of low water, also under stones and coral. (Brazier.)

Sub-family TURBININÆ.

14.—Turbo petholatus.

Turbo petholatus, Linn. Syst. Nat.
„ „ Lam. Anim. Sans. Vert. Tome, 7, p. 43.
„ „ Reeve, Conch. Icon., pl. 3, sp. 12.
Hab. Darnley Island, Torres Straits. Found on the reefs.

15.—Senectus crassus.

Turbo crassus, Wood, Index, Test, Suppl. p. 20, pl. 6, fig. 43.
„ „ Reeve, Conch. Icon., pl. 3, sp. 10.
Hab. Dungeness Island, Torres Straits. Found on the reefs.

16.—Senectus chrysostomus.

Turbo chrysostomus, Linn. Syst. Nat.
„ „ Lam. Anim. Sans. Vert. Tome 7, p. 41.
„ *chrysostoma*, Reeve, Conch. Icon., pl. 7, sp. 28.
Hab. Darnley Island, Torres Straits. Found on the reefs.

17.—Senectus squamosus.

Turbo squamosus, Gray, Voyage of H. M. S. Fly, 1847, Vol. 2, p. 359, pl. 2, fig. 8.
Turbo laminiferus, Reeve, Proc. Zool. Soc., London, 1848, p. 49.
„ „ „ Conch. Icon., pl. 4, sp. 17.

Turbo foliaceus, Homb et Jacq., Voyage Au. Pole Sud. L. Astrolabe et la Zélée, 1854, Tome 5, p. 60, Atlas pl. 14, fig. 34, 37.

Hab. Dungeness Island, Torres Straits. Found on the reefs under large blocks of coral; very common.

18.—SENECTUS NIVOSUS.

Turbo nivosus, Reeve, Proc. Zool. Soc., London, 1848, p. 51, Conch. Icon., pl. 10, fig. 43, 44.

Hab. Dungeness Island, Torres Straits. Found on the reefs.

19.—SENECTUS GEMMATUS.

Turbo gemmatus, Reeve, Proc. Zool. Soc., London, 1848, p. 50.
„ „ „ Conch. Icon., pl. 12, sp. 62.

Hab. Palm Island, North-East Australia, 11 fathoms, mud bottom; Darnley Island, Torres Straits, 25, 30 fathoms, white sand bottom.

SUB-FAMILY AUSTRALIINÆ.

20.—PACHYPOMA RHODOSTOMA.

Trochus rhodostomus, Lam, Anim. Sans. Vert., Tome 7, p. 13.
„ *rhodostoma*, Reeve, Conch, Icon., pl. 7, sp. 35.

Hab. Darnley Island, Torres Straits. Found on the reefs.

SUB-FAMILY LIOTIINÆ.

21.—LIOTIA VARICOSA.

Delphinula varicosa, Reeve, Proc. Zool. Soc., London, 1843, p. 142
„ „ „ Conch. Icon., pl. 3, sp. 12.

Hab. Palm and Barnard Islands, North-East Australia; Dungeness and Nepean Islands, Torres Straits; Hall Sound, New Guinea. Found on the reefs under coral.

22.—LIOTIA DISCOIDEA.

Delphinula discoidea, Reeve. Proc. Zool. Soc., London, 1843, p. 142.
„ „ Conch. Icon., pl. 4, sp. 15.

Hab. Darnley Island, Torres Straits.

23.—Liotia muricata.

Delphinula muricata, Reeve, Proc. Zool. Soc., 1843, p. 142.
" " " Conch. Icon., pl. 4, sp. 18.
Hab. Darnley Island, Torres Straits, 25 fathoms, sand bottom.

Description of Three New Species of Shells, from Australia and New Guinea.

By J. Brazier, C.M.Z.S., Corr. Mem. Roy. Soc., Tas.

1.—Helix (Hydra) Broadbenti.

Shell umbilicated, globular, rather solid, irregularly obliquely striated, chestnut-brown, ornamented with a yellow-brown band below the suture, and a broad one on the base; apex conoid, nearly all of a yellow-brown, whorls 4½, rather convex, the last somewhat inflated, convex below, aperture ovately lunate, diagonal, purplish within, peristome expanded and reflected, thickened, white, the columellar broadly expanded and reflected, covering about one fourth of the umbilicus, which is wide and deep, encircled at its edge with a broad band of chestnut-brown.

Diam. maj. 21½, min. 16½, alt. 15½ lines.

Hab. Port Moresby, New Guinea (Collection, Mrs. Charles Coxen.)

This fine shell I have named after its discoverer, Mr. Kendal Broadbent, who obtained it 12 miles inland from Port Moresby. When at Yule Island I was shown a specimen obtained by Mr. D'Albertis, up one of the rivers at Hall Sound. There are, I believe, specimens in the Australian Museum, received from Mr. Broadbent.

Helix (Calliochlias) Etheridgei.

Shell imperforate, rather thick, somewhat globosely turbinated, finely striated, having minute transverse lengthened grains, blackish chestnut, ornamented at the periphery with one narrow white line, contiguous to the suture, broad yellow-brown band above, running spirally to the apex, the third encircling the

imperforation, and running spirally inwards; spire rather conoid, apex striated, white, whorls 5½, slightly convex, the last large and moderately ventricose, base convexly rounded, suture encircled with a white line, broader above the last whorl, aperture ovate, diagonal, violet tinged within, peristome white, expanded and reflected, very much thickened, margins approximating, the right descending, columellar expanded, dark purple beneath a white callus, and joined to the upper part of the peristome.

Diam. maj. 17, min. 13, alt. 14½.

Hab. Andromache River, between Bowen and Cape Palmerston, North-East Coast of Australia (Mrs. Charles Coxen.)

The first specimen I saw of this species, I was inclined to regard it as a variety of *Helix gratiosa*, Cox. I have seen three specimens since then,—one in Dr. Cox's collection, one in Mr. Hargraves, and the specimen in my own, which I exhibit to-night to the Society, and for which I am indebted to Mrs. Coxen, of Brisbane. It differs from *H. gratiosa*, in being a heavier and thicker shell, in having a thick, white, and reflected peristome, and in being of a violet colour within the aperture. I have named it after my friend, Mr. R. Etheridge, jun., of Edinburgh, F.G.S.

3.—Auricula (Alexia) meridionalis.

Shell oblong ovate, thin, transparent, imperforate, longitudinally striated, spire acuminate, apex papillose, whorls 7, slightly convex, suture impressed, base rounded, aperture vertical, semi-ovate, body whorl in centre, with one minute nearly obsolete white denticulation of callus; below with a thin vertical parietal white plate, sharp at its edge, and entering spirally inwards, columella twisted, white, thickened with callus, slightly expanded; peristome white, thin above, expanded and reflected below, interior of aperture shining brown.

Length 4, breadth 2 lines.

Hab. Port Adelaide Creek, South Australia; found in swamps. Collected by Mr. Yates.

The genus Alexia appears to be confined to Europe, Great Britain, and some of the West Indian Islands. This is, I believe, the first recorded species found in the Southern Hemisphere. Mr. Angas, in his list of the Molluscan Fauna of the Province of South Australia, given in the Proceedings of the Zoological Society of London, 1865, does not mention any of the Family Auriculacea. I have received, *Marinula patula*, Lowe—*Marinula xanthostoma*—H. and A. Adams, from South Australia. It is also found in Port Jackson, and on the coast of Tasmania.

On a new species of *Platycercus* from the interior of New South Wales, by E. P. Ramsay, F.L.S., Curator of the Museum, Sydney.

Platycercus mastersianus, sp. nov.

Adult.—Total length, about 11 inches; wing, 5·8 inches; tail, 6·3 inches; tarsus, 0·8 inch; bill, 0·7 inch. The front, top of the head, nape and ear coverts, crimson, mottled with yellow on the sides of the head, ear coverts and nape; feathers of the hind neck and back yellowish at the tips, blackish on concealed portions, those on the neck washed with red and tinged on the sides with bluish green; rump and upper tail-coverts crimson, the outer series of the latter greenish; scapulars black, broadly margined with yellowish, mingled with red and blue, shoulders deep blue, smaller coverts deep blue centered with black or black margined with blue, median coverts light blue; outer webs of primaries and secondaries blue, the inner webs and the tips of the primaries black; underside of the wing black, traversed about the middle of the quills with an indistinct broken white band (*in a young specimen this white band is complete*); under wing coverts blue; cheeks blue, palest near the mandible, under tail coverts crimson, chest bluish green, margined with yellow, many of the feathers centered with a large crimson spot; abdomen and flanks bluish green, the tips of the lower flank feathers crimson; tail, black below, the apical third of all, except the two centre feathers,

blue, and tipped with white more largely on the inner than on the outer feathers; centre tail feathers above, greenish on the inner webs, blue on the outer; the rest blackish at the base, blue on the outer webs, the anterior third of each feather light blue and tipped with white, the spot increasing in size as the feather is more internal. Bill, bluish at the base, whitish at the tip (probably faded), feet dark brown; iris, in a young living example, dark hazel.

Hab. Interior of New South Wales.

My attention was drawn to this species some two years ago by Mr. George Masters, the late Assistant Curator of the Australian Museum; and although the bird could not in any way be referred to any known member of the genus, I had great doubts of its proving to be a good species, being rather inclined, from the great variegation and ununiformity of its markings, to consider it a hybrid, or cross between some of the smaller species. However, having lately found another, although immature, but having the same characteristic *red front*, and *upper tail coverts*, blue wings and yellowish-green under surface, I have hesitated no longer to describe it as new, and in compliment to Mr. George Masters, who first drew my attention to it, have named it after that gentleman. The adult specimen above described is one of the few relics of our early explorers that I found left in the Museum. The young bird referred to has been recently obtained in the interior northern portion of New South Wales.

Description of a new species of *Pelodryas*, from New Ireland—by E. P. Ramsay, F.L.S., &c., Curator of the Australian Museum, Sydney.

Family PELODRIADÆ.

Pelodryas militarius, sp. nov.

Above dull green, bluish in spirits; below dull yellowish, a rosy line on outer cutaneous ridge of the arms and legs.

Head large, a little broader than long, the crown broad, flat, the muzzle short and rounded; the eye large, paratoid moderate, broad, projecting a little above the tympanum; skin smooth on the back, or with very minute granules, which are larger and conspicuous on the sides and belly; discs of the fingers very large, larger in diameter than the width of the tympanum; tympanum very distinct, nearly as large as the eye and equal to the discs of the fingers, conspicuous, a little longer than broad; the first finger opposite the other three, and joined to the second by a rudimentary membrane, the second and third about ($\frac{1}{3}$) one-third webbed, the third and fourth about ($\frac{1}{2}$) one-half webbed; the first and second with one each, and the third and fourth with two conspicuous subarticular tubercles each; toes nearly full-webbed, the discs smaller than those of the fingers, interdigital membrane extending from the discs on the outer side to a little below the discs on the inner; subarticular tubercles smaller than on the hands, a small obtuse tubercle on the metatarsus at the base of the innermost toe. The tongue large, roundish, somewhat heart-shaped, bluntly notched behind; inner nostrils large, vomerine teeth situated on two oblong discs obliquely placed apart on the inner margin of the nostrils; general color, green above, yellowish white below; the webs, discs of the feet and hands pinkish above, yellowish below; along the under margin of the lower jaw, shaded with dull greenish; a small pink stripe on the margin below the angle of the mouth to near the shoulder; from the disc of the outer finger along the outer margin of the forearm to the elbow, a cutaneous ridge or fold bounded by a pink or rose stripe, a similar fold and rosy stripe along the outer edge of the fifth toe and metatarsus to the back of the tibia; a narrow cutaneous ridge on the inner side of the metatarsus; the tympanum, inner sides of legs and arms, and the sides below the arms pinkish.

Total length, 3·2 inches; forearm, 0·85 inch; longest finger (4th), 0·9 inch; femur, 1·7 inches; tibia, 1·85 inches; metatarsus, 0·95 inch; outer toe, 1·1 inches; longest (4th), 1·25 inches; from

nostril to posterior margin of tympanum, 0·9 inch; from tip of the snout to centre of orbit 0·65 inch; to angle of the mouth, 1 inch; head, 1 inch by 1·1 inches.

This remarkably handsome species, so conspicuous by the rosy seams on the outer margin of its legs and arms, was obtained on New Ireland, by the Rev. George Brown, and formed part of the large and valuable collection that gentleman made in those latitudes. In having the hands and feet almost fully webbed, this species is not unlike a true *Rhacophorus*, but the tongue and fingers at once separate it from that genus. It comes, however, close to our Australian species *Pelodryas cæruleus* (*White*), but differs not only in the colouring in wanting the pink or rosy stripes, but also in being much longer in the limbs, more webbed in the phalanges, and broader and shorter in the head, and in having the paratoid not so high or so largely developed, judging from the single spirit specimen before me.

EXHIBITS.

Mr. Masters exhibited the skull of an aboriginal female, remarkable on account of a large oval aperture about 1 inch by ½ inch at the junction of the two parietal bones. The exhibit was the skull of the "gin" of "King Charley," of Bega. The woman had been accustomed for many years to wear a cap of wet clay upon her head.

Mr. R. D. Ward, M.A., of St. Leonards, exhibited a specimen of a sponge-bearing crab of the genus "Maia."

MONDAY, 26TH MARCH, 1877.

W. J. STEPHENS, M.A., President, in the Chair.

DONATIONS.

Proceedings of the Entomological Society of Belgium, Series II, No. 33.

MEMBER PROPOSED.

John Living, Esq., Sydney.

PAPERS READ.

Note of a Species of Echidna (*Tachyglossus*), from Port Moresby, New Guinea—by E. P. Ramsay, F.L.S.

Should any further proof be necessary of the close relationship of the Fauna of New Guinea, with that of Australia, it will be found in the fact that not less than two species of the peculiar and hitherto strictly Australian genus Echidna, or *Tachyglossus*, of Illiger, (1811) have been lately discovered there, one in the Northern parts of the Island, the other in the South, at Port Moresby.

Through the kindness of a friend at Genoa, I am enabled to lay before you this evening a paper on the first-mentioned of these species, *Tachyglossus Bruijnii (Peters e Doria)*, containing a sketch of the head, from which it is evident that this species is quite distinct from any of those hitherto found in Australia; and through the liberality of the Rev. Mr. Lawes, who has lately presented a fine specimen of the Port Moresby species to the Museum, I am enabled to exhibit a rough sketch of the head and feet, and the quills, and to make some remarks on this very interesting and valuable addition to our Museum collection.

Tachyglossus Bruijnii is distinguished chiefly by the great length of the snout, which is about three times the length of the head. The Port Moresby species is distinguished chiefly by the long, thin, and cylindrical form of the quills, and the stiff flat hair like bristles, on the face; and other differences, which will be observed in the present description. The honor of the discovery of this second New Guinea species is due to the Rev. Mr. Lawes, who some few months ago obtained a young specimen with a remarkably short bill, which I believe has been sent to England. The 2nd specimen, obtained by the same gentleman, a fine and apparently full-grown male animal, has been presented to the Museum, and from this I have taken the following description.

ECHIDNA (*Tachyglossus**) NOV. SP.†

Male.—The head, throat, fore and hind legs, tail, and all the under surface, is covered scantily with stiff flattish bristles of a brown tint, longest on the sides of the abdomen, sides of the body and crown of the head, where they gradually merge into short spines of a whitish horn color, covering the sides of the neck and ears; a curled patch of blackish hair round the ears, overlapped by the spines in front; all the upper parts of the body except the head, is covered with long cylindrical spines, some altogether white, some all black, others parti-colored, with white or black tips, and a few black hairs scattered through the spines and on the sides of the body. The white spines appear to predominate on the nape of the neck and rump, and are longest on the sides of the body and near the dorsal line. The fore limbs are short, stout, and strong, flattened anteriorly, the hind limbs somewhat slender, the second toe nail very long, strong, curved, and hollowed below; the spur on the heel small, sharp, and of a light horn color. The snout is bare to within 0·3 of an inch from the eye, and of a purple brown color; length of bare portion, 2 inches; the skin of the under surface where visible is of a dull reddish brown.

Total length from the tip of snout to tip of tail, 13·4 inches; total length from the tip of snout to hind claw, 15 inches; fore limb, hand, and wrist to tip of longest nail, 2 inches; hind foot and claws from heel, 1·3 inches; hind leg, 3·5 inches; from the heel-spur to end of second toe, without nail, 1·5 inches; from the tip of snout to ear opening, 4·5 inches (*skin stretched*); from tip of snout to angle of mouth, 0·5 inch; from the tip of lower jaw to angle of mouth, 0·45 inch; width of opening, 0·3 inch; width of snout, 0·5 inch; distance between the eyes, 1·4 inches; across the snout at lateral groove, 0·65 inch; across the base of skull,

* "Il nome generico di *Tachyglossus*, Illiger 1811, deve, essere usato invece di *Echidna* Cuvier 1797, perchè Forster fino dal 1778 lo aveva adoperato per denominare un gruppo di Murenidi." *W. Peters e G. Doria, Descrizione di una nuova sp. di Tachyglossus proveniente dalla Nuova Guinea settentrionale.*

† I have not yet learned the name which has been given to this new species, but daily expect to hear of it from my friends in England. Should it, however, still be unnamed, I propose for it the name of *T. Lawesii*, in honor of its discoverer.

about 1·75 inches; length of longest spines in tail, 1·6 inches; length of longest spines from side, 1·5 inches; greatest diameter of spine, 0·1 inch; from tip of snout to the eye, 2·5 inches; from tip of snout to base of skull, about 4 inches; from vent to the tip of the tail, 1·6 inches.

The *Ophidians* of the Chevert Expedition—by WILLIAM MACLEAY, F.L.S.

Most of the Snakes collected during the voyage of the Chevert were procured at the Katow River, on the South Coast of New Guinea.

The character of the country at that place, and for many miles East and West of it, and probably for a long distance inland, is exactly of the kind best suited for the abode of Reptiles. It may be described as a huge Delta, everywhere intersected by water channels, nowhere elevated more than a few feet above the surface of the swamp, with a dense and magnificent vegetation, a moist climate, and perpetual heat.

My visit to the place was a very hasty one. The Chevert anchored off Katow on the 2nd of July, 1875, and left again on the 11th of the same month; only a very few days, therefore, were available for collecting purposes, and of these but little use could be made, as the impenetrable and swampy nature of the country effectually baffled all attempts to get any distance from the sea shore. It is almost entirely to the natives that I am indebted for the Reptiles of that part. Maino, the head man of the village; his son Cooki, a fine lively boy of about twelve; and Howtah, the chief of a neighbouring village, with a number of others, showed a most friendly desire to get for me whatever I wanted. Not a day passed that I did not receive from them joints of bamboo tightly plugged up which were invariably found to be full of Snakes.

All the species from Katow turn out to be new. That, perhaps, is not to be wondered at, as I was the first who had ever attempted to collect on that part of the New Guinea coast; but

what is more remarkable is the prevalence of the non-venomous Colubrine forms of India and Malacca, and the absence of the venomous Australian forms. It would be interesting to know whether Signor D'Albertis' experience on this point agrees with mine. He has, I am told, brought with him from Katow, a very fine collection of Reptiles, but they are all destined, I believe, to enrich foreign Museums.

The other localities at which Snakes were collected during the voyage were, the Islands of Torres Straits and Hall Sound, New Guinea, but as will be seen in the detailed account given below, they are neither remarkable nor numerous.

Family PYTHONIDÆ.

1.—Morelia variegata.

Gray, Zool. Misc. 43, 44; Cat. Brit. Mus., Snakes, part VI., p. 86; Krefft, Snakes of Australia, p. 31.

Morelia Argus, var. c. Dum. and Bibr. Erp. Gen. VI., pp. 386–389.

This species seems to have a very wide range. It is common over the whole interior of New South Wales, where it is known as the "Carpet Snake," and there seems to be no part of Queensland or Northern Australia in which it is not found. My Chevert specimens are from Sue Island, Darnley Island, and Hall Sound. One specimen from the last-named locality is probably of a different species; it seems proportionally thicker in the body and shorter in the tail than the others, and is of a generally darker colour, with the ventral shields greenish white, barred with blackish green.

2.—Liasis amethystinus.

Gray. Zool. Misc. 44; Dum. and Bibr. Erp, Gen. VI., p. 432; Gray, Cat. Brit. Mus., Snakes, part 1, p. 91; Krefft, Snakes of Austral., pl. 5, figs. 5–5a.

Boa amethystina, Schneid. Amph. 2, p. 254; Denk. Akad., Münch, 7, t. 7.

Python amethystinus, Daud. Rept. 5, p. 230; Merrem, 89; Schlegel, Phys. Serp. 178, 419, t. 15, figs. 8–10.

Constrictor amethystinus, Boie, Isis XX. 516.

In the description given of this species by Dumeril and Bibron, the scales on the body are said to be in 47 rows, and on the tail in 27. In my largest specimen there are 45 on the body and only 10 on the tail. There is also a difference in the number of the abdominal and subcaudal shields. According to Dumeril and Bibron, the abdominals are from 303 to 316, and the subcaudals from 85 to 86; while I find them to be, abdominals 325, subcaudals 119-119. Notwithstanding this apparently wide dissimilarity, I have no doubt they belong to one and the same species.

The collection contains several specimens from Darnley Island and Hall Sound. One of those captured at the latter place measured 14 feet in length, and was of great thickness.

Family HOMALOPSIDÆ.

3.—Fordonia Papuensis.

I place this species in Gunther's genus *Fordonia*, because it seems to fit better into it than into any other genus of the *Homalopsidæ*, and I wish to avoid the multiplication of genera, but I must observe that the generic character, "eyes over the third labial shield," does not at all apply to the present species. The head is oval and moderately flat; the anterior frontal shield is longer than broad, and is rounded behind and separates for some distance the two posterior frontals; the eye is very small, and does not come into contact with any labial shield, being completely surrounded by the anterior and two posterior ocular shields, and the superciliary, which is very small. There are five upper labial shields, all higher than long, excepting the last. The body is stout, cylindrical, and tapering at the tail. Scales in 22 series; abdominal shields 147, subcaudals 32-32, some of them sometimes single. Anal plate bifid. Total length, 2 feet; length of tail, 3 inches. Colour, bluish-brown above getting lighter on the sides, and yellow beneath.

Several specimens were got at Katow.

Family CALAMARIDÆ.

Mainophis (new genus.)

Body moderately stout, cylindrical; tail short, tapering to a blunt point; head narrow; two pairs of frontal shields, the anterior pair small, the posterior large, and occupying the position of the loreal; nostril between two nasal shields, the anterior much the largest; one anterior and two posterior ocular shields; superciliary shield small; six upper labial shields; eyes small; scales smooth, and somewhat triangular and rounded at the apex; anal plate bifid; subcaudals in two rows.

This genus seems to resemble in many points the genus *Brachyorrhos*, of Kuhl. The entire anal plate of the latter necessitates the separation of the genera.

4.—Mainophis robusta.

Head moderately flat, and scarcely narrowed into a neck behind; posterior frontal shield abutting on the second labial. Back of a dark lead colour, with the scales on the sides edged with white; abdominal shields quite white. Scales in 17 rows. Abdominal shields 161, subcaudals 46-46. Total length, 2 feet 6 inches; length of tail 5 inches, and of head 1 inch.

Two specimens were procured at Katow.

Katophis (new genus.)

Body and tail rather elongate, head rather narrow with a slightly constricted neck; two pairs of frontal shields, a loreal and one anterior and three posterior orbitals; eight upper labials; scales elongate, keeled, the outer scale on each side square and not keeled on the anterior half of the body; anal plate bifid; subcaudals in two rows; eye large, pupil rounded; teeth equal, smooth.

I do not know any genus approaching this, unless it may be *Elapoidis*, of Boie.

5.—Katophis plumbea.

Scales in 15 rows; abdominal plates 142, subcaudals 67-67. Total length, 2 feet 3 inches. Tail, $6\frac{1}{2}$ inches; head, 10 lines.

Colour, lead brown above, yellowish white beneath; labials, temporals, and side of neck bright yellow.

Several specimens from Katow.

Family DENDROPHIDÆ.

6.—Dendrophis breviceps.

Body elongate, with the ventral shields moderately keeled; head rather short and broadly rounded before the eyes; loreal shield a little longer than high; eight upper labials, the 6th almost surrounded above by the 5th and 7th shields; lower labials, 9; scales in 13 rows anteriorly and 11 posteriorly; abdominal shields, 197; sub-caudals, 145-145; anal plate bifid. Total length, 4 feet. Length of tail, 16 inches; head, 1 inch. Colour, olive green above, beneath yellowish white.

This species may be distinguished from *D. punctulata* by its shorter and blunter head and more slender form, as also by the squarer form of the loreal shield, the greater number and different disposition of the upper labial shields, and by the difference in the relative length of the tail, and in the numbers of the abdominal and subcaudal shields.

Three specimens were procured at Katow.

7.—Dendrophis Katowensis.

Very elongate, narrow, and strongly keeled on the ventral shields; head flat, with constricted neck; loreal shield thrice as long as high; upper labials 8, lower 8; scales in thirteen rows anteriorly and eleven posteriorly; abdominal shields, 189; subcaudals, 135-135; anal bifid; total length, 3 feet 8 inches; tail, 15 inches; colour, pale olive above, whitish beneath, with the labial shields yellow and a black stripe from the upper part of the rostral shield through the loreal and temporals along the side of the neck for two or more inches behind the head. This black mark is narrow on the head, but on the neck has the width of four scales.

This species has a considerable resemblance to a *Dendrophis* which I received some years ago from the Endeavour River, and

which for some time I took to be *D. Calligastra*, Gunth. I believe now that I have never seen the last-named species, nor have I ever came across a *Dendrophis* without the loreal shield.

Two specimens from Katow.

8.—Dendrophis Darnleyensis.

Very elongate and strongly keeled on the ventral shields; head broad and flat, loreal shield twice as long as high; upper labials 8, lower 9; abdominal shields 175, subcaudals 130-130; total length, 3 feet 6 inches; tail, 15 inches; colour, olive above, beneath greenish white, speckled with black. As in the last species, there is a black stripe from the muzzle along the side of the neck, but in this species it is broader on the head, and leaves a yellow spot on the lower part of the anterior ocular shield and on the upper part of the posterior ocular. I am inclined to think that this is identical with the species mentioned above as having, come from the Endeavour River.

Two specimens were captured at Darnley Island.

Family DIPSADIDÆ.

9.—Dipsas fusca.

Dendrophis fusca, Gray, Zool. Misc. 1842, p. 54.

Triglyphodon flavescens, Dum. and Bibr., p. 1080.

Dipsas fusca, Gunth. Cat. Brit. Mus., Snakes, p. 171; Krefft, Snakes of Australia, p. 26, pl. V. f., 7-7a.

One young and small specimen was got at Katow. I am not by any means confident that it is not a distinct species.

Family LYCODONTIDÆ.

10.—Lycodon Darnleyensis.

Body moderately elongate and compressed, with the median line of the back and each side of the abdominal shields slightly angled; head narrow, slightly narrowed at the neck; rostral shield large and triangular above, loreal longer than high; one anterior and two posterior oculars; upper labials 9, lower 10; eye small, abutting on the 4th and 5th labials; pupil elliptical;

scales in 17 series, smooth and rounded; abdominal shields 198, subcaudals 53-53 (not perfect); total length, 2 feet 8 inches; tail, about 6 inches; colour above nitid olive brown, beneath deep yellow.

One specimen from Darnley Island.

PAPPOPHIS (NEW GENUS.)

Body elongate, moderately stout, and slightly trigonal; tail long and tapering; head broad, flat towards the muzzle which is broad and rounded, and constricted behind into a narrow neck; loreal shield not longer than high, except at the lower posterior angle, where it is continued into a point; nostril large between two nasal shields; rostral shield pointed above; frontal shields 4, pentagonal, the posterior pair largest: one large anterior and two small posterior ocular shields; upper labials 9, lower 12; eyes large, in contact with 4th, 5th, and 6th upper labials; anterior teeth in both jaws long, acute and pointed backwards; scales narrow and pointed, the vertebral series larger and rounded; anal shield entire; subcaudals in two series.

I place this genus among the *Lycodontidæ* of Gunther, chiefly on account of its teeth, though its affinity to the *Dipsadidæ* seems to be quite as great.

11.—PAPPOPHIS LATICEPS.

Scales in 21 series on the anterior part of the body, and in 15 towards the tail; abdominal shields 258, subcaudals 115-115; total length, 6 feet 4 inches; tail, 15 inches; length of head, $1\frac{1}{2}$ inches; width of head 1 inch 2 lines, width of neck 4 lines; colour, above greenish brown, beneath greenish yellow sometimes finely mottled with brown.

This species seems to be abundant about Hall Sound. The short but very broad and round-muzzled head, gives it a most formidable appearance, and the extent of its gape may be imagined when I state that Mr. Masters took out of the stomach of one of the specimens now before me, an average-sized hen's egg, which had been swallowed without receiving the slightest injury. The neck is narrow and compressed for several inches from the head; the tail is long, tapering and slightly compressed.

12.—PAPPOPHIS FLAVIGASTRA.

Scales as in the last; abdominal shields 264, subcaudals 94-94; total length, 5 feet 2 inches; tail, 11 inches; length of head, 1½ inches; width of head, 10 lines; width of neck, 5 lines; colour, above pale olive brown, beneath yellow, getting darker towards the tail.

This species differs from the last not only in the number of the abdominal and subcaudal shields and in coloration, but it is proportionally much narrower in the head and shorter in the tail. The loreal shield also is more square. The ventral plates are distinctly keeled, but the tail is almost quite cylindrical.

One specimen was obtained at Katow.

VENOMOUS SNAKES.

13.—DIEMENIA PAPUENSIS.

Body elongate and slender; head long, narrow, flat between the eyes and rather convex in front; scales in 15 rows; anal shield bifid; abdominal shields 225, subcaudals 88-88; total length, 5 feet 6 inches; tail, 15 inches; præocular shield deeply grooved; vertical shield elongate and narrow; superciliaries overlapping the eye. The colour of the head is pale olive, with the under side to the lower edge of the upper labial shields, yellow, and with numerous brown spots on the vertical, superciliary and occipital shields; the scales of the body are of a dark nitid brown, the abdominal shields are of a light slate colour, and the subcaudals pale brownish yellow.

This species seems to come near *D. Psammophis*; indeed I should probably have taken it for one had I not found that the specimens of *D. Psammophis* in the Australian Museum are undoubtedly distinct.

The collection contains only one specimen, and the exact locality of its capture is not mentioned; it is simply labelled New Guinea. I think it must have been got at Hall Sound.

14.—ACANTHOPHIS LAEVIS.

All the head shields and scales of the body quite smooth; superciliary shields much elevated over the eyes; only one

posterior ocular; scales in 21 rows; abdominal shields 113, subcaudals 24 undivided, the others not complete; total length, 17 inches; tail, 2½ inches; colour, uniform very pale brown above, beneath yellow; the lower labials have each a large black spot, the last upper labial and the temporal shield abutting on it are similarly marked, there is also a black semicircular groove in front of the rostral shield; the abdominal and subcaudal shields are broadly barred with black, interrupted in the middle on the body, but continuous on the tail; there are also spots on the outer body scale on each side.

Most unfortunately the tail in my only specimen is imperfect, but I am satisfied that it is really an *Acanthophis*, notwithstanding the smooth scales; in almost every other respect it agrees with the generic characters of *Acanthophis*.

It was procured at Katow.

Family HYDRIDÆ.

15.—Platurus scutatus.

Gunth. Rept. Brit. Ind., p. 356; Krefft, Snakes of Aust., p. 89.

One young specimen was taken in Hall Sound, and it was the only sea snake captured during the Expedition. A species was frequently seen, however, lying on the surface of the water, but it invariably went down as the ship approached. I made an effort at Darnley Island to get the natives to procure me a specimen of it, but they assured me that the snake never left the water, and that it was impossible to get it. The colour seemed to be uniform yellow, the length from 3 to 4 feet, and the thickness quite 2 inches.

Continuation of the Mollusca Collected during the Chevert Expedition.

By J. Brazier, C.M.Z.S., Cor. Mem. Roy. Soc, Tas.

Sub-family UMBONIINÆ.

1.—Umbonium vestiarium.

Trochus vestiarius, Linn. Syst. Nat. ed. 12, p. 1230.

Rotella lineolata, Lam. Anim. Sans, Vert., tome 7, p. 7.

Hab. Hall Sound, New Guinea. Found on the sands at low water.

Sub-family TROCHINÆ.

2.—Angaria delphinus.

Turbo delphinus, Linn. Syst. Nat.

Delphinula laciniata, Lam. Anim. Sans, Vert., tome 6, second part, p. 230.

„ „ Reeve, Conch. Icon., pl 2, sp. 9 a, b.

Hab. Darnley Island, Torres Straits Found on the reefs.

3.—Trochus niloticus.

Trochus niloticus, Linn. Syst. Nat.

„ „ Lam. Anim. Sans, Vert., tome 7, p 17.

„ „ Reeve, Conch. Icon., pl. 1, sp. 3.

Hab. Darnley Island, Torres Straits. Found on the reefs.

4.—Tectus pyramis.

Trochus pyramis, Born, Test., p. 333.

„ *oblescus*, Gmel. Lam. Anim. Sans, Vert., tome 7, p. 18.

„ *acutus*, Lam. Anim. Sans, Vert., tome 7, p. 23.

„ *pyramis*, Reeve, Conch. Icon., pl. 2, sp. 8.

Hab. Darnley Island, Torres Straits. Found on the reefs.

5.—Tectus fenestratus.

Trochus fenestratus, Gmelin, Syst. Nat., p. 3582.

„ „ Reeve, Conch. Icon., pl. 4, sp. 18.

Hab. Darnley Island, Torres Straits. Found on the reefs.

6.—Polydonta maculata.

Trochus maculatus, Linn. Syst. Nat.

„ „ Lam. Anim. Sans, Vert., tome 7, p. 19.

„ „ Reeve, Conch., Icon., pl. 1, sp. 4, pl. 12, f. 4, b, c.

Hab. Darnley Island, Torres Straits. Found on the reefs.

7.—Clanculus, sp. ?

Hab. Sue and Darnley Islands, Torres Straits. Found in coral.

8.—CLANCULUS GRANOSUS, N. SP.

Shell conoid, spire prominent, apex white, smooth, whorls $4\frac{1}{2}$, flattened, spirally encircled with four rows of beaded grains, the two upper near the suture being the smallest, interstices with very minute oblique striæ, ornamented with white and light brown flames, suture deep, last whorl large and inflated, having five beaded rows of grains, the last being contiguous to the suture, base slightly convex, finely grained, aperture oblique, triangularly ovate, peristome denticulated, columella white, umbilicus marginal plicated and denticulated below.

Diam. maj. $2\frac{3}{4}$, min. $2\frac{1}{4}$, alt. 3 lines.

Hab. Barnard Islands, No. III, North-East Coast of Australia. Found in crevices of large blocks of coral.

9.—MONODONTA LABIO.

Trochus labio, Linn Syst. Nat. ed. 12, No. 595, p. 1230.

Monodonta labio, Lam. Anim. Sans, Vert., tome 7, p. 54.

Hab. Darnley Island, Torres Straits. Found on the reefs.

10.—EUCHELUS DENIGRATUS.

Euchelus denigratus, Chem. Chenn, Manuel de Conch., part 1, page 358, fig. 2657.

Hab. Palm Island, North-East Australia, found under coral; Cape York, North Australia, found under stones and coral; Sue and Darnley Islands, Torres Straits, on the reefs under coral.

11.—EUCHELUS, SP. ?

Hab. Cape Grenville, North-East Australia, 18 fathoms. Brought up on the ship's cable.

12.—EUCHELUS, SP. ?

Hab. Darnley Island, Torres Straits. One specimen found under a large stone.

13.—EUCHELUS, SP. ?

Hab. Hall Sound, New Guinea.

14.—THALOTIA CRENELLIFERA.

Thalotia crenellifera, A. Adams, Proc. Zool. Soc.. London, 1851, p. 173.

Hab. Darnley Island, Torres Straits, 25, 30 fathoms, sandy mud bottom.

15.—THALOTIA MACULATA, N. SP.

Shell conical, imperforate, brown, ornamented with reddish brown spots; whorls 5½, flattened, slightly angled, suture canaliculated, crenulated above and below, transversely striated with two lines raised like keels; interstices longitudinally minutely striated, forming between the lines small and deep pits, carinated at the periphery, spotted with four reddish brown spots, base convex marked as above in sculpture, but more conspicuously mottled with reddish-brown, peristome thickened and crenulated internally with nine prominent lines, columella white, thickened, having a minute denticulation of callus, aperture nearly roundly ovate.

Diam. maj. 5, min. 4¼, alt. 7 lines.

Hab. Cape York, North Australia, 11 fathoms sandy mud bottom; off Katow, New Guinea, 8 fathoms, mud bottom; West side of Warrior Reef, Torres Straits, 8 fathoms hard mud bottom; Darnley Island, Torres Straits, 20, 25, 30 fathoms sandy mud bottom.

16.—ZIZIPHINUS NOBILIS.

Ziziphinus nobilis, Philippi, Kuster, Conch., p. 86, pl. 15, f. 6.
„ „ Reeve, Conch. Icon., pl. 2, sp. 10.

Hab. Darnley Island, Torres Straits, 25 fathoms, white sand bottom. Three fine specimens of this beautiful species were found.

17.—ZIZIPHINUS SIMILARIS.

Ziziphinus similaris, Reeve, Conch. Icon., pl. 5, sp. 32, a, b.

Hab. Palm Island, North-East Australia, 8 fathoms. Three fine living specimens obtained from a sandy mud bottom.

18.—ZIZIPHINUS SCOBINATUS.

Ziziphinus scobinatus, A. Adams, Reeve, Conch Icon, pl. 5, sp. 29.

Hab. Darnley Island Torres Straits, 12 fathoms sandy bottom.

19.—ZIZIPHINUS POLYCHROMA.

Ziziphinus polychroma, A. Adams, Proc. Zool. Soc., London, 1851, p. 168, sp. 50. Reeve, Conch. Icon., pl. 6, sp. 40.

Hab. Cape York, North Australia, 11 fathoms sandy mud bottom. One fine specimen found.

20.—ZIZIPHINUS ?

Hab. Darnley Island, Torres Straits, 30 fathoms. Specimen dead and worn.

21.—ZIZIPHINUS, ?

Hab. Cape York, North Australia, 11 fathoms. Specimen dead and sea worn.

22.—ZIZIPHINUS, SP. ?

Hab. Fitzroy and Palm Islands, North-East Australia. Specimens very young, from both places.

23.—ZIZIPHINUS, SP. ?

Hab. Sue and Dungeness Islands, Torres Straits. Found on the reefs.

24.—EUTROCHUS, SP. ?

Hab. Darnley Island, Torres Straits, 30 fathoms, sand bottom. Specimens all more or less broken in the lip.

25.—EUTROCHUS, SP. ?

Hab. Darnley Island, Torres Straits, 30 fathoms, sand bottom. Specimens dead and worm eaten.

26.—EUTROCHUS, SP. ?

Hab.—Palm Island, North-East Australia, 10 fathoms, mud bottom, two young specimens found; Cape Grenville, North-East Australia, 20 fathoms, sandy mud bottom, three young specimens found.

27.—MONILEA CORRUGATA.

Trochus corrugatus, Koch., Phil. Abbild., p. 67. Trochus, pl. 2, f. 7.

Monilea lentiginosa, A. Adams, Proc. Zool. Soc., London, 1851, p. 188.

Hab. Cape Grenville, North-East Australia, 25 fathoms sandy mud bottom.

EXHIBITS.

Mr. Masters exhibited 12 very singular forms of crabs, selected from the collection of crustacea made during the Chevert Expedition.

MONDAY, 30TH APRIL.

W. J. STEPHENS, M.A., President, in the Chair.

DONATIONS.

Proceedings of the Entomological Society of Belgium, Series II, No. 35., by the Society.

MEMBER ELECTED.

John Living, Esq., Sydney.

PAPERS READ.

Continuation of the Mollusca, Collected during the "Chevert" Expedition—by J. BRAZIER, C.M.Z.S., Corr. Mem. Roy. Soc. Tas.

SUB-FAMILY STOMATELLINÆ.

1.—STOMATELLA SULCIFERA.

Stomatella sulcifera, Lam. Anim. Sans, Vert. tome 6, part 2, p. 210.

" " A. Ad. Proc. Zool. Soc., London, 1850, p. 30.

" " Sowerby, Thes. Conch., Vol. 2, p. 834, pl. 174, fig. 3.

Hab. Bet Island, Torres Straits, found on the beaches after a gale of wind; Darnley Island, Torres Straits, found on the reefs under coral.

2.—STOMATELLA MACULATA.

Stomatella maculata, Quoy. Voy. Astrolabe, Vol. 3, pl. 66.

" " A. Adams, Proc. Zool. Soc., London, 1850, p. 30.

Stomatella maculata, Sowerby, Thes. Conch., Vol. 2, p. 834, pl. 175, fig. 32, 33, 34.

Hab. Bet Island, Torres Straits, found on the beaches after a gale of wind.

3.—STOMATELLA ORBICULATA.

Stomatella orbiculata, A. Adams, Proc. Zool. Soc., London, 1850, p 31.

„ „ Sowerby, Thes. Conch., Vol. 2, p. 837, pl. 174, fig. 23, 24.

Hab. Darnley Island, Torres Straits, found on the reefs under coral.

4.—STOMATELLA ORNATA, N. SP.

Shell ovate, dorsal convex, transversely striated, having longitudinal elevated striæ, with alternate smaller lines, giving the surface a granulated appearance, adorned with undulated brown, white and rose pink flames, sometimes in the form of lengthened spots, whorls 3, roundly convex, suture impressed, spire lateral, prominent, apex acute, white, aperture large, roundly oval, somewhat large and expanded in front, the right or upper margin thickened, straight, thin at the edge, spotted with white and brown columella regularly arched, thickened below, slightly expanded above near its junction with the right margin; umbilicus small, slightly grooved, interior of aperture bluish white, transparent.

Length $4\frac{1}{2}$, breadth $2\frac{1}{2}$, alt. $1\frac{1}{2}$, aperture long $2\frac{1}{2}$ lines.

Hab. Barnard Islands, No. III., North-east Coast of Australia; four specimens found under a large block of coral.

This splendid species is allied to *Stomatella picta*—Montrouzier, and *stellata*, Souverbie, both from New Caledonia.

5.—STOMATIA DECUSATA.

Stomatia decusata, A. Adams, Proc. Zool. Soc. London, 1850, p. 34.

„ „ Sowerby, Thes. Conch., Vol. 2, p. 843, pl. 175, fig. 60.

Hab. Darnley Island, Torres Straits, 30 fathoms, bottom white sand and broken shells; one specimen found on a dead piece of *Pecten*.

6.—STOMATIA ANGULATA.

Stomatia angulata, A. Adams, Proc. Zool. Soc., London, 1850, p. 34.

„ „ Sowerby, Thes. Conch., Vol. 2, p. 843, pl. 175, fig. 57.

Hab. Palm Island, North-east Australia; found on the reefs under coral.

7.—STOMATIA, SP. ?

Hab. Palm Island, North-east Australia, 8 fathoms, sandy mud bottom, specimen white and sea worn.

8.—GENA LINTRICULA.

Gena lintricula, A. Adams, Proc. Zool. Soc., London, 1850, p. 38.

„ „ Sowerby, Thes. Conch., Vol. 2, p. 830, pl. 173, fig. 22.

„ „ Reeve, Conch. Icon., pl. 1, sp. 1.

Hab. Sue Island, Torres Straits, 3 fathoms; found in the crevice of coral at the edge of the reefs on the west side of the Island.

FAMILY HALIOTIDÆ.

9.—HALIOTIS OVINA.

Haliotis ovina, Chem. Reeve, Conch. Icon., pl. 9, sp. 28.

Hab. Darnley Island, Torres Straits; one specimen found under a large stone.

10.—HALIOTIS VARIA.

Haliotis varia, Linn. Syst. Nat., ed. 10, p. 780.

„ „ Reeve, Conch. Icon., pl. 2, sp. 4.

Hab. Darnley Island, Torres Straits. Very abundant under stones and coral on the reefs.

11.—HALIOTIS VIRIDIS.

Haliotis viridis, Reeve, Proc. Zool. Soc., London, 1846, p. 56.

„ „ „ Conch. Icon, pl. 13, sp. 40.

Hab. Darnley Island, Torres Straits; five specimens found on the reefs under stones and coral.

12.—HALIOTIS ASTRICTA.

Haliotis astricta, Reeve, Proc. Zool. Soc., London, 1846, p. 56.
„ „ „ Conch. Icon, pl. 13, sp. 41.

Hab. Darnley Island, Torres Straits. Two specimens found on the reefs under stones.

13.—TEINOTIS ASININA.

Haliotis asinina, Linn. Syst. Nat., p. 1256, No. 745.
„ „ Lam. Anim. Sans, Vert, tome 6, part 2, p. 216.
„ „ Reeve, Conch. Icon., pl. 6, sp. 18.
„ *asinium*, Gmel, p. 3688, No. 6; *Teinotis asinina*, Chenu, Manuel de Conch., part 1, p. 368, fig. 2745.

Hab. Darnley Island, Torres Straits, found on the reefs, very common.

SUB-ORDER EDRIOPHTHALMA.

FAMILY FISSURELLIDÆ.

14.—LUCAPINA JUKESI.

Fissurella Jukesii, Reeve, Conch. Icon., pl. 7, sp. 45.
„ „ Sowerby, Thes. Conch., Vol. 3, p. 193, pl. 241, fig. 147.

Hab. Palm and Home Islands, North-east Australia, found on the reefs under coral; West Side of Warrior Reef, Torres Straits, 8 fathoms, mud bottom, specimens dead; Bet, Sue and Darnley Islands, Torres Straits, found on the beaches after gales; Katow, New Guinea, 8 fathoms, mud bottom, specimens dead.

15.—LUCAPINA CALYCULATA.

Fissurella calyculata, Sowerby, Genera of Shells, No. 21, f. 4.
„ „ Thes. Conch., Vol. 3, p. 193, pl. 140, fig. 126, 127.

Hab. Princess Charlotte Bay, North-east Australia, 13 fathoms, hard sand bottom, specimens large; Cape Grenville, North-east Australia, 20 fathoms, sandy mud bottom, specimens somewhat sea worn; Cape York, North Australia, 11 fathoms, specimens very small; Darnley Island, Torres Straits, 25, 30 fathoms,

bottom of sand stones and broken shells, specimens very large; Bet Island, Torres Straits, one specimen found on the beach; Katow, New Guinea, 8 fathoms, four dead specimens were found on a coral and mud bottom.

16.—LUCAPINA TICAONICA.

Fissurella Ticaonica, Reeve, Conch. Illust., Fiss. 107.

„ „ Sowerby, Thes. Conch., Vol. 3, p. 197, pl. 140, fig. 110.

Hab. Cape Grenville, North-east Australia, 25 fathoms, three specimens obtained; Cape York, North Australia, 11 fathoms, one found; West Side of Warrior Reef, Torres Straits, 8 fathoms, one found; Darnley Island, Torres Straits, 25, 30 fathoms, seven specimens found; Bet Island, Torres Straits, one specimen found on the reef under coral; Katow, New Guinea, 8 fathoms, coral and mud bottom.

I believe that this species is washed into deep water from under coral and stones during heavy gales. Variable in colour from greenish brown rays to pinkish spots, other specimens from dirty white with light red and broad green rays.

17.—LUCAPINA ELONGATA.

Fissurella elongata, Philippi, Sowerby, Thes. Conch., Vol. 3, p. 201, pl. 243, fig. 185.

Hab. Home Islands, off Cape Grenville, North-east Australia; Darnley Island, Torres Straits. One specimen was found living under coral at each of the above localities.

18.—LUCAPINA, SP. ?

Hab. Cape Grenville, North-east Australia, 1 specimen, 25 fathoms; Cape York, North Australia, 3 specimens, 11 fathoms; Warrior Reef, West Side, 8 fathoms, 3 specimens; Darnley Island, Torres Straits, 25 fathoms, 1 specimen; Katow, New Guinea, 8 fathoms, mud bottom, 5 specimens.

The whole of these specimens were dead and very much sea worn, and like *Lucapina Ticaonica*, washed into deep water.

19.—LUCAPINA, SP. ?

Hab. Cape Grenville, North-east Australia, 25 fathoms, one dead and sea worn, in shape like *Lucapina elongata*, Philippi.

20.—LUCAPINA, SP. ?

Hab. Warrior Reef, West Side, 8 fathoms, one specimen found dead and sea worn; what little sculpture remains resembles *Lucapina Singaporensis*, Reeve.

21.—LUCAPINA MINUTA.

Fissurella minuta, Lam. Anim. Sans, Vert. tome 6, part 2, p. 15.
„ *gemmulata*, Reeve, Conch. Icon.

Hab. Bet Island, Torres Straits, 11 fathoms, brought up in the dredge with weeds, sand and broken shells; three specimens found, two dead and one living.

22.—LUCAPINA, SP. ?

Hab. Cape Grenville, North-east Australia, 20 fathoms, one specimen found dead and worn.

23.—LUCAPINA, SP. ?

Hab. Sue Island, Torres Straits, one specimen found on the beach dead and sea-worn.

24.—LUCAPINA, SP. ?

Hab. Cape Grenville, North Australia, 20 fathoms, one specimen sea worn, about two lines long.

25.—LUCAPINA, SP. ?

Hab. Darnley Island, Torres Straits, 12 fathoms, mud bottom, one dead specimen, two lines long.

25.—MACROCHISMA COMPRESSA.

Macrochisma compressa, A. Adams, Proc. Zool. Soc., London, 1850, p. 202.
„ „ Sowerby, Thes. Conch., Vol. 3, p. 205, pl. 244, fig. 218.

Hab. Darnley Island, Torres Straits, 30 fathoms, white sand bottom, one fine living specimen found on a piece of broken shell.

The locality of this beautiful rose pink and white-rayed species appears not to have been known when described by Mr. A. Adams, who, likewise, does not give the dimensions of any of the species.

26.—RIMULA EXQUISITA.

Rimula exquisita, A. Adams, Proc. Zool. Soc., London, 1851, p. 226.

" " Sowerby, Thes. Conch., Vol. 3, Fissurellidæ, pl. 10, fig. 3, 4.

Hab. Cape Grenville, North-east Australia, 25 fathoms, bottom of broken shells, coral and stones; Bet Island, Torres Straits, 11 fathoms; Tarawa Island, Gilbert Group, found on the sands after gales. (Brazier). No. VI. or Eclipse Island, off Cape Sidmouth, North-east Australia; found on the beaches after a gale.

27.—EMARGINULA VARIEGATA.

Emarginula variegata, A. Adams, Proc. Zool. Soc., London, 1851, p. 84.

" " Sowerby, Thes. Conch., Vol. 3, pl. 245, fig. 9, 10.

Hab. Fitzroy and Barnard Islands, No. III., North-east Australia, found under stones; Cape Grenville, North-east Australia, 25 fathoms, bottom of broken shells and stones, specimen dead; Darnley Island, Torres Straits. I also found specimens when at Percy Island, No. II., North-east Australia, in 1871, and at Port Makera, San Christoval, Solomon Islands. Mr. Cuming found it at the Philippine Islands. Mr. Sowerby, in his Thesaurus Conchyliorum, gives it a very wide Habitat—Australia.

28.—EMARGINULA MICANS.

Emarginula micans, A. Adams, Proc. Zool. Soc., London, 1851, p. 84.

" " Sowerby, Thes. Conch., Vol. 3, pl. 246, fig. 60.

Hab. Cape Grenville, North-east Australia, 20 fathoms, sandy mud bottom, two specimens found not in very good condition: Darnley Island, Torres Straits, 15, 20, 30 fathoms, white sand with coral and broken shells; the specimens both dead and living; Raine Island, on the edge of the Great Barrier Reef, North Coast of Australia. (Lieutenant Ince). No. VI., or Eclipse Island, North-east Australia, found on the beaches. (Brazier.)

29.—EMARGINULA, SP. ?

Hab. Bet Island, Torres Straits, 11 fathoms, dead specimen; Cape York, North Australia, 8 fathoms, two dead specimens; Katow, New Guinea, 8 fathoms, mud bottom, one found.

These specimens are very bad and sea-worn; they may be only the young state of *Emarginula micans.*

30.—EMARGINULA, SP. ?

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud bottom, one specimen somewhat sea-worn; comes near to *Emarginula dilecta.* (A. Adams.)

31.—SCUTUS CORRUGATUS.

Parmophorus corrugatus, Reeve, Proc. Zool. Soc., London, 1842, p. 50.

Scutus corrugatus, Sowerby, Thes. Conch., Vol. 3, pl. 248, *f.* 4.

Hab. Home Islands, off Cape Grenville, North-east Australia, on the reefs under coral; Cape Grenville, 25 fathoms, specimens four lines long.

Description of a new species of *Gerygone.*

By E. P. Ramsay, F.L.S., &c.

GERYGONE FLAVIDA, SP. NOV.

The whole of the upper surface, ear-coverts, and sides of the head, brown, washed with greenish olive; tail and wings of a slightly darker brown, the outer webs of the quills washed with olive; the inner webs of the primaries very narrowly and the secondaries, margined with white at the base; a sub-terminal

spot of dark brown near the tips of the tail feathers, indicating the remains of a very indistinct cross-band; upper tail-coverts, brown; lores and a stripe on either side of the throat from the base of the lower mandible to below the ear-coverts, white; under wing-coverts, white, washed with yellow; throat and the whole of the under surface, citron yellow; deeper in tint on the abdomen and under tail-coverts; iris, hazel; bill, black; feet and legs, blackish brown.

Total length from tip of tail to tip of bill, 4·1 inches; wing, 2·2 inches; tarsus, 0·7 inch; tail, 1·75 inches; bill from forehead, 0·4 inch; from the angle of the mouth, 0·5 inch. The bill is strong and large in comparison with the size of the bird, and the bristles at the base of the bill but slightly developed.

This species, which may be distinguished from *G. albogularis* its nearest ally, by the white lores, and absence of white line over the eye, and indistinct band on the tail, inhabits the dense scrubs of the Herbert River district (where I shot it in 1874). It has a pleasing twittering song of short duration.

EXHIBITS.

Mr. E. Ramsay, F.L.S., exhibited some new or rare fish from Port Jackson—one a species he had not yet determined, belonging to the family *Clupeidæ*, about a foot in length, and remarkable for the great number of its branchiostegals, apparently a species of *Elops* new to Port Jackson; the other a very rare species of *Prionurus* of the family *Acronuridæ*, agreeing with Gunther's description of *Prionurus microlepedotus*, except in the form of the snout, the upper profile of which is convex and rounded just above the mouth; the laminæ of the tail, 11 in number on either side, 6 on the tail and caudal portion of the body in a straight line, with a small one over the fourth, and two on either side of the 6th, on the tail; the formulæ of the fins are D. $\frac{8}{24}$, P. 17, V. $\frac{1}{5}$, A. $\frac{3}{21}$, colour uniform dark brown.

MONDAY, 28TH MAY, 1877.

WM. MACLEAY, F.L.S., in the Chair.

DONATIONS:

Vol. XIX., Ann. de la Soc. Ent. de Belg. By the Society.

Compte Rendu des Sciences Nat. de Cherbourg. By the Society.

PAPERS READ.

Continuation of the MOLLUSCA Collected during the Chevert Expedition—by J. BRAZIER, C.M.Z.S., Corr. Mem. Roy. Soc., Tas.

FAMILY DENTALIIDÆ.

1.—DENTALIUM OCTOGONUM.

Dentalium octogonum, Lam. Anim. Sans, Vert., tome 5, p. 344.
„ „ Sowerby, Thes. Conch., vol. 3, pl. 223, fig. 9.

Hab. Princess Charlotte Bay, North-East Australia, 13 fathoms, coarse sandy mud bottom; Cape York, North Australia, 11 fathoms, white sandy mud; Katow, New Guinea, 8 fathoms, sandy mud and coral; Darnley Island, Torres Straits, 30 fathoms, sandy mud.

Specimens from Darnley Island are 36 lines long.

2.—DENTALIUM DECEMCOSTATUM, N. SP.

Shell tapering, thin, white, slightly arched, longitudinally 10-ribbed, ribs somewhat sharp, interstices nearly flat, transversely finely striated, apex with a small perforation, basal aperture large, circular.

Length, 10 lines; diam. of apex, $\frac{1}{4}$; diam. of base, $1\frac{1}{2}$ line.

Hab. Katow, New Guinea, 8 fathoms, sandy mud bottom.

3.—DENTALIUM SP. ?

Hab. Bet Island, Torres Straits. Four dead and broken specimens were found at 11 fathoms.

4.—Dentalium sp ?

Hab. Darnley Island, Torres Straits, 25 fathoms, sandy mud. The greater part of this species is broken at the aperture.

5.—Dentalium duodecimcostatum n. sp.

Shell straight, white, thin, shining, smooth, six sided, having two longitudinal rounded ribs, one on the edge of each square, from the centre between the interstices one fine rib, extending to the base, making in all 12 ribs; apex tapering, entire with minute perforation; aperture large.

Length, 11 lines; diam. of apex, $\frac{1}{4}$; base, 1 line.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

Only one specimen found. It differs from anything at present known. The shell is six-sided, the base with twelve ribs, and from the centre to the apex six, with the interstices smooth.

6.—Dentalium robustum, n. sp.

Shell nearly straight, thick, dull white, longitudinally 9 ribbed, ribs rounded, wide apart, narrow towards the apex, interstices flattened, smooth; apex with small perforation, entire; aperture thickened, regular.

Length, 10 lines; diam. of apex, $\frac{3}{8}$; base, $1\frac{1}{4}$ line.

Hab. Katow, New Guinea, 8 fathoms, sandy mud and coral.

7.—Dentalium katowense, n. sp.

Shell white, thin, transparent, slightly arched near the apex, 7-ribbed, from the centre to the base 14, those above being most conspicuous; interstices with minute lengthened striæ; apex thickened; perforation small; entire aperture circular.

Length, 7 lines; diam. of apex, $\frac{1}{2}$; base, 1 line.

Hab. Katow, New Guinea, 8 fathoms, sandy mud and coral. A white species with fourteen ribs on the base, having seven at the apex more defined.

8.—Dentalium pseudo-sexagonum.

Dentalium pseudo-sexagonum, Desh. Sowerby, Thes. Conch., vol. 3, p. 103, pl. 224, fig. 34.

Hab. Cape York, near Albany Island, North Australia, 11 fathoms, sandy mud bottom; Darnley Island, Torres Straits, 30 fathoms, sandy mud.

This species is six ribbed near the apex, finely striated below, as Mr. Sowerby expresses it. The specimens before me have very fine thread-like ribs; the number of ribs in all are from 24 to 25, and 6 at or near the apex; shell thin, white, slightly arched.

9.—DENTALIUM BISEXANGULATUM.

Dentalium bisexangulatum, Sowerby, Thes. Conch., Vol. 3, p. 102, pl. 223, fig. 8.

Hab. Cape Grenville, North-East Australia, 20 fathoms, mud bottom; Cape York, North Australia, 11 fathoms; Warrior Reef, West side, Torres Straits, 8 fathoms, hard mud; Darnley Island, 25, 30 fathoms, sandy mud bottom; Sue Island, Torres Straits, 11 fathoms.

A white shell, with 12 ribs, the notch in the apex very small; some specimens do not show it whatever.

10.—DENTALIUM HEXAGONUM.

Dentalium hexagonum, Gould, Sowerby, Thes. Conch., vol. 3, p. 103, pl. 233, fig. 10.

Hab. Cape York, North Australia, 11 fathoms, sandy mud; Katow, New Guinea, 8 fathoms; Darnley Island, Torres Straits, 30 fathoms, sandy mud; North America. (Gould) China and Singapore. (Sowerby.)

11.— DENTALIUM SEPTEMCOSTATUM, N. SP.

Shell white, slightly arched, 7-ribbed, ribs somewhat sharp, having finer ones between, extending from the base to the centre, interstices with fine transverse silk-like striæ, apex perforated, perforation with a minute notchlike fissure on the dorsal margin, aperture circular, entire.

Length, 7 lines; diam. apex, $\frac{1}{4}$; base, $\frac{3}{4}$ line.

Hab. Evans' Bay, Cape York, North Australia, 6 fathoms, sand bottom.

12.—Dentalium quadricostatum, n. sp.

Shell white, very slightly arched, four angled, keel or rib at each angle, rounded, finely serrated, interstices flat, marked with transverse lines; apex perforated, perforation entire; aperture angled.

Length, 8 lines; diam. of base, 1 line.

Hab. Princess Charlotte Bay, North-east Australia, 13 fathoms; York Island, Torres Straits, 13 fathoms, hard mud bottom, (brought up on the ship's anchor); Katow, New Guinea, 8 fathoms, sandy mud bottom.

If this species is laid upon its side it forms a true square; when resting with the arched part of the apex down, it forms four angles, with a serrated rib on each angle. The 11 specimens from Katow, 16 from Princess Charlotte Bay, and 1 from York Island, all have the same character.

13.—Dentalium dispar.

Dentalium dispar, Sowerby, Thes. Conch., vol. 3, p. 103, pl. 244, fig. 37.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. One specimen, nine lines long, was found, a glossy and smooth shell below, with fine ribs at or near the apex.

14.—Dentalium anulosum, n. sp.

Shell thin, transparent, tapering, slightly curved, marked by incised circular lines from the apex to the centre, and from that to the base quite smooth, apex thickened, perforated, perforation entire, aperture circular.

Length, 7 lines.

Hab. Princess Charlotte Bay, North-East Australia, 13 fathoms, sandy bottom.

The upper part of this beautiful thin, transparent shell has a ringed appearance like a *trachea*. Allied to *Dentalium politum*, Linn., that species being distinguished by the incised lines that divide its whole length.

15.—DENTALIUM LÆVE, N. SP.

Shell light amber colour, sometimes white, smooth, glossy, strongly arched, half-moon shaped, basal margin pinched in about two lines long, forming somewhat like a shoulder, then slightly ventricose, from that to the apex regularly tapering, apex with a minute perforation, entire.

Length, 14 lines; diam. of base at shoulder, 1; below, ½ line.

Hab. Princess Charlotte Bay, North-East Australia, 13 fathoms, sandy mud; Cape Grenville, North-East Australia, 20 fathoms, mud; York Island, Torres Straits, 13 fathoms, hard mud bottom; Darnley Island, Torres Straits, 5, 15, 20, 30 fathoms, mud, sand, and sandy mud bottom.

The lower part of this species resembles the spines of the Sea-urchins "*Echinidæ*." The greater part of the specimens are incrusted over with a fine coating of coral-like substance.

16.—DENTALIUM LONGITRORSUM.

Dentalium longitrorsum, Reeve, Proc. Zool. Soc., London, 1842, p. 197.

" " Sowerby, Thes. Conch., vol. 3, pl. 223, fig. 59, 60.

Hab. Darnley Island, Torres Straits, 30 fathoms sandy mud.

This elongated species is sometimes pure white, as well as bright amber colour, with a very slight dorsal fissure. Specimens 32 lines long.

FAMILY TECTURIDÆ.

17.—SCUTELLINA CRENULATA.

Scutella crenulata, Broadrip, Proc. Zool. Soc., London, 1834, p. 48.

Hab. Bet Island, Torres Straits. Found on the beaches after a gale.

FAMILY PATELLIDÆ.

18.—PATELLA SACCHARINA.

Patella saccharina, Linn. Syst. (12th ed.), p. 1258.

" " Lam. Anim. Sans, Vert., tome 6, second part, p. 326.

" " Reeve, Conch. Icon., pl. 28, sp. 72.

Astrolepas " D'Argenville, Conch., text 2, fig. m.

Hab. Darnley, Sue, Bet, and Long Islands, Torres Straits. Found on the reefs under coral.

The Lizards of the "Chevert" Expedition, by William Macleay, F.L.S.

The following paper contains a list of the Saurian reptiles obtained during the voyage of the "Chevert" to New Guinea, in 1875, belonging to the tribes *Cyclosaura* and *Geissosaura*, leaving the *Nyctisaura* and *Strobilisaura* for a future paper. A few North Australian species are herein noticed and described from their evident affinity to the Torres Straits and New Guinea Lizards, though not actually captured during the cruise of the "Chevert."

Family MONITORIDÆ.

1.—Odatria punctata.

Gray, Cat. Liz. Brit. Mus., p. 7, Liz. of Aust. and New Zeal., pl. 1.

Monitor tristis, Schlegel, Abhild, p. 73.

I have one specimen labelled "New Guinea," but no exact locality given.

2.—Odatria ocellata.

Gray, Cat. Liz. Brit. Mus, p. 8, Liz. of Aust. and New Zeal., pl. 2.

A small specimen from the Endeavour River.

3.—Monitor chlorostigma.

Cuv. Mus., Paris; Gray, Griff. Anim. Kingd. 9; Schleg. Abhild., t. 22, f. 6, head; Gray, Ann. Nat. Hist. 1, p. 394; Dum. et Bib. Erp. Gen. 3, p. 489; Gray, Cat. Brit. Mus., p. 12.

I have specimens of this beautiful species from Katow, Darnley Island, and Dungeness Island. The specimen from Darnley Island has the bright yellow spots which adorn the whole body much larger than in the other specimens, covering, as a rule, five or six scales.

4.—HYDROSAURUS PRASINUS.

Gray, Cat. Liz. Brit. Mus., p. 13.

Monitor prasinus, Muller, Verhan. Rept., t. 5; Schleg. Abhild. 78, t. 22, f. 5.

I have two specimens of what I have no doubt is this species, one from Katow, the other from Hall Sound. The ridge on the tail is very feeble for a *Hydrosaurus*.

FAMILY GYMNOPHTHALMIDÆ.

5.—CRYPTOBLEPHARUS BURTONII.

Gray, Cat. Liz. Brit. Mus., p. 64.

Scincus plagiocephalus, Peron. Mus. Par.

„ *Burtonii*, Desjard. Ann. Sci. Nat. 22, 1831, 298.

„ *arenarius* and *furcatus*, Schleg. Mus. Leyd.

„ *aurens*, Mus. Par.

Cryptoblepharus Peronii, Coct. Mag. Zool. t.; Dum. and Bib. Erp. gen. 5, p. 812.

„ *Leschenaultii*, Coct. Scinc. t.

Ablepharus pœcilopleurus, Weigm. N. Act. N. Cur. XV. 183, t. 8, f. 1; Gray, Ann. Nat. Hist. II., p. 335; Grey, Trav. Aust. II., p. 426; Seba, Thes. II., 4 t. 2, f. 9-10.

Tiliqua Buchanani, Gray, Ann. Nat. Hist. II., p. 291.

This active little Lizard was very abundant on the rocky shores of Darnley Island. It seems to be of all the Lizard tribe the most subject to variety in colouring. I have specimens from almost every place visited by the Expedition, and each place seems to have its peculiar variety. The Darnley Island specimens are of a sombre brown, with the white lateral line indistinct. The Hall Sound specimens are of a beautiful golden green on the back, with conspicuous silvery white lateral streaks. Those from Cape York, Cape Grenville, and other places, all differ more or less, and yet there are no good grounds for supposing that they are not all of the same species.

FAMILY LIALISIDÆ.

Several specimens of this family were taken at Katow, Hall Sound, and other places visited by the "Chevert," and among

them there are close resemblances of *L. Burtoni*, *L. bicatenata*, and *L. punctulata*, but I find myself quite unable to come to any conclusion as to the identity of any of them. The second of these species—*bicatenata*, is placed by Gray in his "Lizards of Australia and New Zealand," as a synonym of *L. Burtonii*, while Dr. Gunther makes it a synonym of *L. punctulata*. The whole family wants revision and redescription, and until this is done it is a mere waste of time to attempt to define species.

Family SCINCIDÆ.

6.—Hinulia Papuensis.

Ear opening vertical, oval, and without denticulations; rostral plate large and rounded above; nasals large, distant; internasal much broader than long, emarginate in front where it meets the rostral, and broadly rounded behind where it meets the fronto-nasals; there are two small post-nasals, the uppermost very small and in contact with the lateral angle of the internasal; the fronto-nasals are contiguous behind, in front a small plate intervenes; supraorbitals, six on each side; scales on the back in 12 or more series; colour, pale brown on the back, thickly marked with darker, transverse, irregular bars; on the sides the marks are blacker and more longitudinal; the under surface is of a yellowish white, a little spotted about the lips with black; the legs are strong and marked like the body; the tail is slightly compressed towards the apex. The whole animal is of a robust form.

One specimen, about 10 inches long, was procured at Katow.

This species shows an affinity to *Hinulia naevia* of Gray, the *Lygosoma melanopogon* of Dumeril and Bibron.

7.—Hinulia atrocostata.

Of slender form and rather weak limbs; nasal plates not contiguous, fronto-nasals contiguous; supraorbital region of 4 plates and a little elevated; the first five upper labials equal and nearly square, the sixth and seventh larger and pentagonal; ear openings round and unarmed; colour, pale brown above, with a few dark spots on the back, and a number of black transverse streaks

on the sides, beneath yellowish white; the upper labial plates have each a large yellow spot about the middle; scales on the back in six series; anterior toes short.

One specimen from Katow, 9 inches long.

8.—HINULIA PARDALIS.

Moderately robust; tail acutely pointed, and about the length of the body; nasal plates not contiguous and large, with the nostril small and in the middle; fronto-nasals not contiguous; interparietal small; other plates as in the last species; ear opening small and oval without denticulations; scales on the back in four series; colour, pale olive on the back with numerous black spots, whitish on the sides, with very many black spots and blotches, and yellowish white on the under surface.

One specimen, about 7 inches long, from Barrow Island, N. E. Australia.

9.—HINULIA SPALDINGI.

Ear opening moderate and oval, with three large denticulations in front; nasal, rostral, and internasal plates touching, or nearly so, at an acute point; fronto-nasals contiguous for some distance; supraorbitals three on each side, the anterior plate very large and triangular, its apex touching the fronto-nasal; scales on the back in four series; legs rather slender; hind toes elongate; two large preanal scales; tail very fine and tapering; colour, above pale olive brown, with three broad longitudinal black white-edged stripes, one vertebral, the others lateral and marked with a line of large white patches; the under surface is white, with black spots on the sides and labial plates; the legs are light-coloured with black stripes.

A number of this species were obtained from the Endeavour River. Like many of the genus it seems to vary much. Two of the specimens before me are without the vertebral black stripe, and the nasal plates are not contiguous.

10.—MOCOA NIGRICAUDIS.

Ear opening nearly round, without denticulation; rostral plate rounded above; nasals not contiguous; fronto-nasals nearly contiguous; supraorbitals four; fronto-parietals two, of the same

size as the interparietal; scales of the back in about six series; colour, reddish brown above with a few scattered black spots—these become very dense towards the apex of the tail, giving it a black appearance; the under surface is greyish yellow; the labial plates are spotted with black; body moderately robust; limbs weak; toes of fore feet short; total length, 9 inches.

Hab. Darnley Island.

11.—LYGOSOMA BOUGAINVILLII.

Dum. and Bib. Erp. Gen. V., p. 716; Gray, Ann. Nat. Hist. II., p. 332; Cat. Brit. Mus. Rept., p. 85.

Hab. Cape York.

12.—LYGOSOMA FRAGILE.

Small, fragile, weak limbed; toes short; head short and blunt at the muzzle; nasal plates not contiguous; fronto-nasals contiguous; fronto-parietals 2, interparietal large and triangular; scales on the back in four series, the two middle ones largest; colour, bronzy brown above and greyish white below, with a well-defined black stripe along each side from the eye to the tail; there are also a few spots about the chin; ear opening somewhat round and rather large, with the tympanum not deep.

Two specimens from Hall Sound under 4 inches in length.

13.—LYGOSOMA ORNATUM.

Elongate, tapering very gradually to the apex of the tail, which is more than twice the length of the body; head long, flat, conical; ear opening small and round: anterior legs very slight; toes short; scales of the back in four series; the whole upper surface from the muzzle to the tip of the tail of a pale, nitid, brownish yellow, with one or two lines of small black spots, and with the plates of the head beautifully marked out with black dots on the sutures; the sides from the muzzle to the tip of the tail are of a leaden black, the line of demarcation above being sharply defined; the ventral surface is yellowish, with spots on the head and tail.

I have only one specimen from 4 to 5 inches long of this curious Lizard; it is from the Endeavour River.

14.—EUMECES BRUNNEUS.

Body robust and somewhat flat; tail thick, conical, longer than the body; legs and toes short and strong; muzzle short; supranasal plates distant; fronto-nasals also distant; frontal elongated behind; fifth upper labial largest; ear openings oval, with four denticulations in front; scales rather large, those on the back and sides with dark edges; colour, brown above, brownish yellow beneath. Length, 12 to 13 inches.

This species was taken at Darnley Island, where it seems to be rather abundant.

15.—MABOUIA MARMORATA.

Body moderately robust and flat; head flat; supranasal plates distant; internasal large, pentagonal, as long as broad; fronto-nasals subtetragonal, not contiguous; frontal pentagonal, rounded and not much produced behind; fronto-parietal single, less produced behind than in front, with a small subtriangular interparietal; fifth upper labial largest; a groove behind the nostril; ear openings small, oval, not denticulated; scales smooth, in about 12 series on the back; legs strong; toes moderately elongate; tail about the length of the body; colour, above greenish brown mottled with black, the sides darker, beneath greyish white, getting darker on the tail. Length, 8 inches.

One specimen from Long Island, in Torres Straits.

16.—MABOUIA UNIFORMIS.

Of rather elongate form; head short and somewhat flat; supranasal plates narrow and distant; fronto-nasals distant; frontal elongate and rounded behind; fronto-parietals 2, smaller than the interparietal; none of the upper labials much larger than the others; ear openings slightly oval, with three or four small denticulations in front; scales on the back in about six series; legs rather slender; anterior toes short, posterior moderately elongate; colour above uniform bronzy brown, beneath yellowish white; three or four dark blue bands extend from the upper labials to beneath the head. Length, 8 inches.

One specimen from Cocoanut Island, Torres Straits.

17.—MABOUIA. IRRORATA.

Of slender elongate form; head rather short; supranasal plates distant; internasal large, truncate in front, and broadly rounded behind; fronto-nasals tetragonal, distant; frontal not much longer than broad, and rounded at the posterior apex. Supraorbitals 4, the second pair nearly contiguous; fronto-parietal single, with a more than usually large interparietal; the fifth upper labial twice the size of any of the others; ear openings semioval, no distinct denticulations; scales in 10 or 12 series on the back, very smooth; legs long and slight; toes elongate, unequal, and ringed with white; colour, pale olive marked with black on the back, black thickly marked with minute white spots on the sides, and silvery white underneath. Total length, 6 inches, of which the tail is $4\frac{1}{2}$ inches.

One specimen from Hall Sound. It seems to come near the *Scincus atrocostatus* Lesson, Voy. Coq. II. 50, t. 4, f. 3.

18.—HETEROPUS LONGIPES.

Nasal plates small and distant; the internasal forms a broad straight suture with the rostral, and is rounded in the middle of its base, where it joins the frontal; fronto-nasals large, and nearly contiguous; fronto-parietal single, with a small rounded interparietal behind. The fifth upper labial is the largest. Ear openings slightly ovate, with acute denticulations; three in front large, and several above small. Legs, especially the anterior pair, long and weak, the toes elongate and unequal. Scales very indistinctly 3 keeled, those on the back in 8 or 10 series. Colour, olive brown above, with a darker streak on each side, beneath, yellowish white; central preanal scale large. Tail long and taper. Total length, 6 inches. From the Endeavour River.

19.—HETEROPUS VARIEGATUS.

Plates of the head as in the last species; nostril on the hinder part of the nasal plate. Ear openings oval, with a strong denticulation in front, and one or two minute ones on each side of it. Legs stronger and shorter than in the last species, the toes much shorter. Tail, long and taper. Scales indistinctly

keeled, those on the back in 8 series. Colour, dark olive brown on the back, with a few distant lighter coloured spots representing obsolete stripes, and a broad black band along each side, edged with yellow; under surface yellowish.

Length, 5 inches.

Found at Darnley Island.

20.—HETEROPUS QUINQUECARINATUS.

Head rather blunt, nostril near the middle of the nasal plate; the sixth upper labial largest; the other head plates as in the two last species. Ear openings oblong-oval, with three denticulations in front. Legs, moderate; toes slightly elongate; scales each with five keels the lateral ones short and indistinct, and those on the back in about 6 series. Tail scarcely longer than the body. Colour, dark brown above, and white below, with a light black-edged side streak.

Length, 6 inches.

Hab. Darnley Island.

21.—HETEROPUS SEXDENTATUS.

Head short, the supraorbital regions rather elevated; nostril in the middle of the nasal plate; fifth upper labial largest; other head plates as in the last described species. Ear openings oblong ovate, with six denticulations in front. Legs, moderate; toes, elongate; scales indistinctly tricarinated, those on the back in 8 series. Tail, fine and tapering, a little longer than the body. Colour, olive brown above, and greenish white beneath. The scales of the back and sides have their lateral angles tipped with dark brown, which gives the appearance of a number of dark longitudinal lines.

Length, 6 inches.

Found at Cape Grenville.

22.—HETEROPUS CHEVERTI.

Head flat; nostril at the back part of the nasal plate; fifth upper labial largest; head plates as in all the other species, the interparietal perhaps being more pointed at the apex. Ear

openings nearly round, with three denticulations in front. Legs, moderate; toes, elongate; scales very indistinctly tricarinated, the keels showing more as points on the edge of the scale than on it, those on the back in 8 series. Tail, considerably longer than the body, and very acutely pointed. Colour, greenish olive above, blueish white beneath, the under side of the legs and tail being of a somewhat pinker hue.

Length, 5 inches.

Found on Barrow Island.

23.—Heteropus fuscus.

Dum. and Bib. Erp., Gen. v., p. 759, Gray, Cat. Brit. Mus, Lizards, p. 107.

Several specimens of what I believe to be this species were obtained at Katow. The ear openings, however, are not quite free from denticulations, which is a character assigned to the species by Dumeril and Bibron.

24.—Heteropus bicarinatus.

Head plates not different from all the other species. Ear openings large and round, with a few very acute denticulations. Legs and toes elongate. Scales sharply tricarinate on the neck, and bicarinate on the back and sides. Colour, above dark mottled with black, on the sides, and upper surface of the legs, brown spotted with yellow, beneath, whitish.

Length, 4 inches.

Found at Hall Sound.

25.—Euprepis longicaudis.

Head, rather elongate, and pointed at the muzzle; supranasal plates not contiguous; fronto-nasals, contiguous; supra-orbitals, 4; fronto-parietal, single, large, and hexagonal, with a small interparietal; the sixth upper labial plate more than twice the size of any of the preceding plates. Ear openings nearly round, with two or three flat denticulations in front. Scales on the back rather large, each showing under a lens from 3 to 5

very fine keels or striae. Tail, twice the length of the body. Toes, elongate and unequal. Colour, above uniform brown, beneath yellowish white.

Length, 16 inches.

Several specimens were procured at Darnley Island.

26.—EUPREPIS SUBMETALLICUS.

Body and head, flat; supra-nasal plates distinct; fronto-nasals not contiguous; supraorbitals and fronto-parietal, as in the last species. No interparietal. Fifth upper labial largest. Ear openings small, oval, and slightly denticulated in front. Scales, indistinctly tricarinated, those on the back in 8 or 10 series. Toes, elongate. Tail, not longer than the body. Colour, above, bronzy green, mottled with black, and with a broad black mark along each side, immediately beneath a light streak, which extends from the muzzle above the eye; beneath, greenish white.

Length, about 7 inches.

One specimen, from Hall Sound.

27.—EUPREPIS SIMILLIMUS.

In the shape of the head, and disposition of the plates, this species resembles *Euprepis longicaudis*, excepting that the fronto-nasals are not contiguous, and the supraorbital regions are more elevated. Ear openings oval, and denticulated in front. Legs, long and slender; toes, elongate. Tail, about twice the length of the body. Scales, very indistinctly keeled or striated. General form, long, and very slender. Colour, above mottled greenish brown, beneath blueish white, with black spots on the sides of the head and body, and on the feet.

Length, 8 inches.

One specimen from Katow.

Note on *Monacanthus Cheverti*, Alleyne and M'Leay.

By W. MACLEAY, F.L.S.

In the proceedings of this Society, vol. 1, page 335, Dr. Alleyne and I, in a joint paper, on the Fishes taken during the

voyage of the Chevert, described and figured under the name of *Monacanthus Cheverti*, a fish which we believed to have been up to that time undescribed. We mentioned at the time that, with the exception of there being no trace of the third dorsal spine—the chief distinguishing feature of the genus *Balistes*—the Fish seemed to be identical with *Balistes aculeatus*, Linn. It turns out that the absence of the spine in our specimen must have been the result of accident, as a few days ago Mr. Masters pointed out to me specimens of the same Fish from the Endeavour River, in which the third spine was distinctly visible. The proper name of the fish is therefore *Balistes aculeatus*, and *Monacanthus Cheverti* must sink into a synonym.

Some further remarks on Poëphila *Gouldiæ* and Poëphila mirabilis (*Homb.* et *Jacq.*)

By E. P. Ramsay, F.L.S, &c., Curator of the Australian Museum, Sydney.

In my last note on this species (P.L.S. of N.S.W., vol. I, pt. iii, p. 281), I mentioned that, on account of the *black-headed (P. gouldiæ)* and the crimson-headed birds (*P. mirabilis*) having been found breeding together, I was wont to consider the *former*, *females* of the latter, and that both were of the same species. Further investigations, however, have caused me to modify my views on this subject, and to speak with more confidence in the matter. I find now that birds, undoubtedly males, having black heads, have been found breeding with similarly coloured females, and crimson-headed males, with females also crimson-headed, as has been previously pointed out by Mr. Gould.* This, however, does not prove them to be distinct species, as we well know that many birds breed in comparatively speaking immature plumage, and others again take years before they attain the livery of the fully adult birds. This I believe to be the case in the present instance. The young birds of the first year at least, have the plumage dull brown, with an indication of a pectoral band. As they become older, the *head*

*Gould's Handbook, 1 p. 422.

becomes *black*, the *back green*, and the *pectoral band purplish*—or *rosy violet*, becoming deeper in the males, sooner perhaps, than in the females; *both sexes retain this plumage* for *a considerable time*, and *are found breeding in this stage;* with age, however, *both sexes attain the crimson heads* so characteristic of the lovely *Poëphila mirabilis*. This fact is shown in a skin of a female I now exhibit, in which the *head is parti-coloured, crimson* and *black*. There is a narrow black line all round the crimson of the head, and also *round the eye*, and a black patch in front of it, while the sides and crown are chiefly crimson. They are found breeding, often in flocks together, sometimes in large flocks, but frequently, pairs in both stages of plumage are met with by themselves, scattered over a large extent of country. They have a considerable range, being found as far south as 100 miles due west of Port Denison, which I consider to be their most southern limit.

I am indebted to Inspector Armit for much interesting information on the habits of these beautiful finches, and other rare birds in Northern Queensland, also for the loan of the specimens I exhibit this evening.

Since writing the above, I have received from Mr. Armit a specimen of this species in a very interesting stage of plumage. The head is black, as in that stage, which may be distinguished under the name of *gouldiæ*, but the *feathers of the crown and sides of the face* to behind the eyes, are tipped with *bright golden yellow*, while their basal portion is light brown or whitish; a narrow bluish band bounds the black of the throat and head; the remainder of the upper surface green, except the upper tail coverts, which are bluish, with some of the younger feathers green, margined at the tips with white; the two centre tail feathers are elongated and pointed, the breast is light buff washed with pale violet purple, the flanks and abdomen pale yellow, the under tail coverts white; the bill is light horn colour at the base, becoming blackish at the tip.

Total length, 4 inches; wing, 2·4 inches; tail, 1·5 inches; tarsi, 0·5 inch; bill, 0·45 inch.

This cannot be considered a distinct species until a good series of skins be obtained, proving this phase of plumage to be constant. We sadly want a carefully collected and large series of all these forms, with the sexes carefully determined by discretion, and until this be obtained we shall not be able to arrive at any definite conclusion respecting them. It would appear that this golden headed phase is intermediate between the brown and black headed birds, and I have also before me a *crimson* headed bird in change from the *black*. If this *golden headed* bird were not decidedly a young individual one might be induced to describe it as a new species, showing parallel phases of plumage with *P. mirabilis*, and in the adult acquiring a *golden* instead of a *crimson* head. Those ornithologists, therefore, who take this view of the question may distinguish the *golden headed* forms by the name of *P. armitiana*, in the same way that some good ornithologists, considering the black headed birds to be a distinct species, distinguish them under the name of *Poëphila gouldiæ*.

Description of a supposed *new species* of *Acanthophis*, from North Australia.

By E. P. Ramsay, F.L.S., &c.

ACANTHOPHIS PRAELONGUS. SP. NOV.

Scales in 21 rows; abdominal plates, about 120; anal, 1; subcaudals, *undivided*, 26 *divided*, 24-24. Head, elongate, about three times as long as broad; distance between the eye and snout equal to interorbital space; superciliaries rough, ridged, much elevated, and extended over the eye; eye, large; *pupil, round*; plates of the head slightly rugose; the body elongate, scales on the back keeled in about 10 rows, the keels becoming less developed towards the tail; tail, a little over a fifth of the total length. The *nasal orifices* large, *placed a little behind the middle of a large plate.** General colour of the upper surface, dark ashy brown, darker on the head and tail, the neck, body,

*In Mr. Krefft's work on the Snakes of Australia, I find it stated (p. 79) that, in the genus *Acanthophis* the "*nostrils*" are "*between two shields*." This is a mistake, as in none of the numerous examples I have examined of any species of this genus are they so placed. The subcaudals are moreover two-rowed in nearly half of their number.

and tail banded with narrow light ashy brown bands, and a blackish line formed by the black margins of a series of scales, the bands and lines being about 50 in number, rather indistinct on the neck and tail. The tail is laterally flattened towards the end, and shows an irregular row of white dots along the side, from the anal shield to the tip; all the under surface is whitish yellow, closely spotted with dark brown, in a double line along the sides; and in a regular transverse series through the centre of each abdominal plate; gular scales with one spot on each; chin shields, and lower labials, white, with blackish irregular markings. The six upper labials more or less margined with whitish below; the 4th, 5th, and 6th, and the temporal, blackish in their central portions.

Total length of the specimen, 16·5 inches; head, 1 inch by 0·6 inch; tail, 3 inches; from the eye to the snout, 0·35 inch; from snout to angle of mouth, 0·8 inch.

Hab. Cape York.

This species may be distinguished from all other species I know of by its elongated head, *round pupil*, *large eye*, and *high*, *overhanging superciliary shields*. The nostril is also large, and placed a little behind the middle of a large elongated nasal plate.

The specimen above described, the Museum has lately received in a collection of reptiles, &c., from Cape York, presented by Mr. W. Powell, of Somerset. During my last tour in Northern Queensland, I examined a large number of Death-adders, one of the most common snakes there, but without meeting with any but the common Sydney species, *Acanthophis antarctica*.

EXHIBITS.

Mr. E. P. Ramsay exhibited a new species of *Euryscaphus*, family *Scaritidæ*. Three specimens of a burrowing frog, allied to *Lymnodynastes dorsalis (Gray)*, taken by James Ramsay, Esq., near the Merool Creek, Lachlan district. A species of *Antennarius*, of an inky-black colour, taken in Port Jackson. Specimens of *Poëphila mirabilis*, illustrative of the differences in plumage exhibited in this species. Specimen of the death-adder, *Acanthophis praelongus*, described in the last paper.

Mr. Brazier exhibited a new species of *Helix* from New Guinea, and announced his intention of reading a description of it at the next meeting of the Society.

MONDAY, 25TH JUNE, 1877.

W. J. STEPHENS, ESQ., M.A., President, in the Chair.

DONATIONS.

Compte Rendu de la Soc. Entomologique de Belgique, Ser. II., No. 37, by the Society.

History of Australian Tertiary Geology.—Geology of Portland.—On a new genus of Nudibranchiata.—On the Fresh Water Shells of Tasmania. — Description of New Tasmanian Shells.—Figures of Tertiary Fossils from Table Cape, Tasmania, by the author, the REV. J. E. TENISON WOODS.

PAPERS READ.

Continuation of the Mollusca collected during the "Chevert" Expedition, by J. BRAZIER, C.M.Z.S., Corr. Mem. Roy. Soc. Tas.

FAMILY CHITONIDÆ.

1.—TONICIA PICTA.

Chiton pictus, Reeve, Conch. Icon., pl. 15, sp. 79.

Hab. Darnley Island, Torres Straits. Two fine specimens found under stones.

2.—TONICIA SP?

Hab. Darnley Island, Torres Straits. One specimen found under a stone, not in good condition. About seven lines long.

3.—CHITON PICEUS.

Chiton piceus, Gmel. Syst. Nat., p. 3204.

„ „ Reeve, Conch. Icon., pl. 13, sp. 70.

Hab. Darnley Island, Torres Straits, found on the reefs under coral, specimens from four to five inches long. Port Jackson specimens two inches long.

4.—CHITON PULCHERRIMUS.

Chiton pulcherrimus, Sowerby, Proc. Zool. Soc., London, 1841, p. 103.

" " Reeve, Conch. Icon., pl. 20, sp. 132.

Hab. Darnley Island, Torres Straits, found under a stone, only one specimen obtained of this charming species. ' Phillipine Islands. (Cuming.)

5.—SCHIZOCHITON ELONGATUS.

Chiton elongatus, Reeve, Conch. Icon., pl. 8, sp. 40, a.b.

Hab. Cape Grenville, North East Australia, under stones and coral. Sue and Darnley Island, Torres Straits. Raine Island, Barrier Reef. (Ince.)

6.—CRYPTOPLAX FASCIATA.

Chitonellus fasciatus, Quoy et Gai. Voy. de l. Astrolabe, vol. 3, p. 408, pl. 73, fig. 21, 29.

" " Desh in Lamarcks Anim. Sans. Vert., tome 7, p. 482, edition 2.

" " Reeve, Conch., Icon., pl. 1, sp. 2.

" " Chenu, Manuel de Conch., part 1, p. 384, fig. 2891.

Hab. Darnley Island, Torres Straits, found on the reefs in crevices of large blocks of coral; Tongatabu, Friendly Islands. (Quoy et Gaimard).

7.—CRYPTOPLAX OCULATA ?

Chitonellus oculatus, Quoy et Gaimard Voy. de l'Astrolabe, vol. 3, p. 410, pl. 73, fig. 37, 38.

Hab. Sue Island, Torres Straits, found in coral. The specimen not being in very good condition, it cannot be identified with certainty.

ORDER TECTIBRANCHIATA.

FAMILY ACTEONIDÆ.

8.—ACTÆON FLAMMEUS.

Voluta flammea, Gmel. Syst. Nat., p. 3435.

Tornatella flammea, Lam., Anim. Sans Vert., tome 6, part 2, p 219.

Bulimus variegatus, Brug. Dict., No. 67.

Tornatella flammea, Reeve, Conch., Syst., vol. 2, pl. 206, f. 6.

„ „ Chenu. Manuel de Conch., part 1, p. 386, fig. 2900.

Hab. Palm Island, North East Australia, 8 fathoms, mud bottom; off Katow, New Guinea, 8 fathoms, mud and coral; Warrior Reef, west side, Torres Straits.

9.—BUCCINULUS SOLIDULUS.

Soluta solidula, Linn., Syst. Nat., p. 1187.

„ „ Hanley, Ipsa., Linnæi Conchylia, p. 212.

Bulla solidula, Linn. Syst., Mat. ed. 10, t. 2, p. 728, No. 346.

Bulimus solidulus, Brug. Dict., No. 68.

Helix nævia, Gmel, p. 3656, No. 251.

Voluta solidula, Dillu. Cat., t. 1, p. 594, No. 13.

Tornatella solidula, Lam. Anim., Sans. Vert., tome 6, part 2, p. 220.

„ „ Reeve, Conch., Icon., pl. 1, sp. 3, a.b.

„ „ Reeve, Conch, Syst., vol. 2, pl. 206, f. 7.

Solidula solidula, A. Adams, Proc. Zool. Soc., London, 1854, p. 61.

Hab. Princess Charlotte Bay, North East Australia, 13 fathoms, sand; Darnley Island, Torres Straits, 25 to 30 fathoms, sandy mud; Nouméa, New Caledonia, 8 fathoms, mud. (Brazier.)

10.—BUCCINULUS GLABER.

Tornatella glabra, Reeve, Proc. Zool. Soc., London, 1842, p. 60.

„ „ Conch. Syst., vol. 2, pl. 206, f. 12.

„ „ Conch. Icon., pl. 1, sp. 4, a. b. c.

Solidula glabra, A. Adams, Proc. Zool. Soc. London, 1854, p. 61.

Hab. Palm Island, North East Australia, found on a sand flat, in a pool of water; Sue and Darnley Islands, Torres Straits, 11 to 25 fathoms, sandy mud bottom; Anse Vata, near Nouméa, New Caledonia, found in pools of water inside the reefs. (Brazier.)

11.—BUCCINULUS AFFINIS.

Solidula affinis, A. Adams, Proc. Zool. Soc., London, 1854, p. 61.

Hab. Darnley Island, Torres Straits, 25, 30 fathoms, sandy mud; New Ireland, washed on shore after gales; Port Jackson, New South Wales, 2, 5, 10, 15 fathoms, mud and sandy-mud (Brazier.)

This species is more slender and elongated than *Buccinulus solidulus*, is very finely tessellately painted with brown or black on a white ground, having sometimes one or two white bands.

12.—BUCCINULUS SUTURALIS.

Solidula suturalis, A. Adams, Proc. Zool. Soc., London, 1854, p. 61.

Tornatella suturalis, Reeve, Conch., Icon., pl. 2, sp. 93.

Hab. Evans Bay, Cape York, North East Australia, 6 fathoms, sand.

13.—BUCCINULUS NITIDULUS.

Tornatella nitidula, Lam. Anim. Sans. Vert. tome 6, part 2, p. 221.

Solidula nitidula, A. Adams, Proc. Zool. Soc., London, 1854, p. 61.

Tornatella nitidula, Reeve, Conch. Icon., pl. 2, sp 5.

Buccinulus nitidulus, Chenu, Manuel de Conch. part 1, p. 380, fig. 2904.

Hab. Bet Island, Torres Straits, 11 fathoms, sand, also inside the reefs on the beaches after gales; Nouméa, New Caledonia, on mud flats, at low water; New Ireland, New Britain, and Duke of York Islands. (Brazier.)

14.—RINGICULA CARON.

Ringicula caron, Hinds, Proc. Zool. Soc., London, 1844, p. 97.

Hab. York Island, 13 fathoms, hard mud; Darnley Island, Torres Straits, 25, 30 fathoms, sandy mud; Port Jackson, New South Wales, 10, 15 fathoms, mud. (Brazier.) Straits of Malacca, 17 fathoms, mud. (Hinds.)

15.—RINGICULA ARCTATA.

Ringicula arctata, Gould, Otia, p. 122.

Hab. Cape York, North Australia, 11 fathoms, sandy mud; Port Jackson, 10, 15 fathoms, mud. (Brazier.) Hong Kong. (Gould.)

In this species the aperture is auricular, the outer lip thickened and the whorls finely, distantly striated at the lower part.

16.—RINGICULA GRANDINOSA.

Ringicula grandinosa, Hinds, Proc. Zool. Soc., London, 1844, p. 96.

Hab. Off Katow, New Guinea, 8 fathoms, sandy mud and coral; Phillipine Islands. (Cuming.)

This species is smooth, the last whorl, large, of a squarish form, full and rounded. The upper portion of the aperture is strongly denticulated.

17.—RINGICULA ANGASI.

Ringicula Australis, Crosse, Journal de Conch., 1865, p. 44, pl. 2, fig. 5.

Hab. Darnley Island, Torres Straits, 25, 30 fathoms, sandy mud. Anse Vata, near Nouméa, New Caledonia, found in shell-sand after a gale. (Brazier.) Head of Spencer's Gulf, in shell-sand. (G. F. Angas.)

I have changed the specific name as above. Mr. Hinds having described in the Pro. Zool. Soc., 1844, p. 97, a species of *Ringicula* under the specific name of *Australis*, from Port Lincoln. The description of Mr. Crosse's specimen appears to have been taken from a dead and worn shell. The living specimens I obtained in Torres Straits have very minute spiral lines on the last whorl. Specimens that are slightly worn don't show them whatever.

18.—RINGICULA ABYSSICOLA N. SP.

Shell thin, white, somewhat acuminate, whorls $4\frac{1}{2}$, moderately convex, opaque at the suture, smooth, last whorl large, encircled below the centre with four transverse lines; columella with two

strong plaits turned back over the front of the last whorl, above with one prominent callus like tooth, joined to the upper part near the suture, aperture small, auriform; outer lip thickened and reflected, having in the centre a prominent tubercular callosity, with a minute one below near the region of the small canal.

Length $\frac{3}{4}$ diam., maj. $\frac{1}{2}$ lin.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. Only two specimens of this minute and interesting species were found.

Family APLUSTRIDÆ.

19.—Aplustrum Thalassiarchi.

Bulla Thalassiarchi, Martini, Chemn., p. 146, fig. 1350, 1351.

„ *amplustre*, Linn. Syst., Nat., p. 1184.

„ *aplustre*, Lam. Anim. Sans, Vert. tome 6, part 2, p. 35.

„ *amplustre*, Hanley, Ipsa. Linnæi. Conchylia, p. 206.

„ „ Wood, Index. Test., pl. 18, fig. 26.

Aplustra pulchella, Swainson, Malacology, p. 248.

Aplustrum Thalassiarchi, Sowerby, Thes. Conch., vol. 2, p. 564, pl. 120, figs. 4, 5, 6.

Aplustrum aplustre, Chenu, Manuel de Conch., part 1, p. 286, fig. 2905.

„ *fasciatum*, Schumacher.

Hab. Bramble Cay, on the outer Great Barrier Reef, North East Australia, on the sands at low water; Aneiteum, New Hebrides; New Caledonia. (Brazier.)

Family CYLICHNIDÆ.

20.—Cylichna arachis.

Bulla arachis, Quoy et Gaimard, Voy. de l'Astrolabe, tome 2, p. 361, pl. 26, f. 28, 30.

„ „ (Cylichna), Sowerby, Thes. Conch., vol. 2, p. 591, pl. 133, 134.

Hab. Off Katow, New Guinea, 8 fathoms, mud. Evans Bay, Cape York, North Australia, 6 fathoms, sandy mud; Port Jackson, Port Stephens, New South Wales. (Brazier.) Port du Roi George, Nouvelle Hollande. (Quoy et Gaimard.) King George's Sound, on the South West Coast of Australia, of English Geographers, Mr. G. B. Sowerby calls it Port St. George.

21.—CYLICHNA STRIGELLA.

Bulla strigella, Lovén, Ind. Moll. Scandinavia, p. 10.

„ „ (CYLICHNA) Sowerby, Thes. Conch, Vol. 2, p. 592, pl. 125, fig. 141.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. (Brazier.) Cagayan, Phillipine Islands, 25 fathoms. (Cuming.)

The three specimens found are white and shining, without the fuscous epidermis mentioned by Lovén.

22.—CYLICHNA CONCENTRICA.

Bulla concentrica (CYLICHNA), Adams, in Sowerby, Thes Conch., vol. 2, p. 594, pl. 125, fig. 146.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. (Brazier.) Cagayan, Phillippine Islands. (Cuming.)

23.—CYLICHNA DECUSSATA.

Bulla decussata, (CYLICHNA), Adams, in Sowerby, Thes. Conch. vol. 2, p. 594, pl. 125, fig. 147.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. (Brazier.) China Sea. (Cuming.)

Six fine specimens found with three of *Cylichna concentrica*.

24.—CYLICHNA MINUTA N. SP.

Shell cylindrical, small, white, thin, contracted in the middle, longitudinally and transversely rugosely striated; whorls $3\frac{1}{2}$, apex umbilicated, deep; aperture narrowly linear, peristome thin, contracted in the centre, slightly produced above, expanded below, columella thickened, straight, slightly reflected.

Length $1\frac{1}{4}$, diam. at base $\frac{3}{4}$, above the centre $\frac{1}{2}$ lin.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. Two specimens found.

The apex of this beautiful little species is quite depressed or truncated, and the umbilicus of the apex sunk deep down, somewhat allied in sculpture to *Cylichna decussata*.

25.—MNESTIA BIZONA.

Bulla bizona (CYLICHNA), A. Adams, in Sowerby, Thes. Conch., vol. 2, p. 597, pl. 125, fig. 148.

Hab. Darnley Island, Torres Straits, 15, 20, 30 fathoms, sandy mud; Princess Charlotte Bay, North East Australia, 13 fathoms, sand; Evans' Bay, Cape York, North Australia, 6 fathoms, sand.

This species is variable in colour, some specimens being fulvous, with two encircling bands of a light yellow, others again all white, and covered with a pale yellow epidermis, and encircled with two reddish brown, nearly obsolete lines, others not having any bands whatever. It appears to be a plentiful species at Darnley Island, something like two hundred were obtained during five days that dredging was carried on. And with one haul of the dredge only single specimens were obtained at the other two localities.

26.—MNESTIA GRANOSA N. SP.

Shell small, ovate, light straw yellow, varigated with two nearly obsolete white bands, in some specimens not visible, contracted above, produced and rather acuminate below; longitudinally and transversely rugosely striated, interstices smooth, the whole surface of the shell having the appearance of somewhat square-like grains, spire conspicuous in the deep umbilicus of the apex, outer margin of the umbilicus white and very rugose; aperture narrow, acuminately produced and thickened above, slightly produced below; columella thickened, straight, slightly reflected, umbilicus minute, with a white margin, peristome moderately inflexed.

Length 2 lines, breadth 1 lin.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. The whole surface of this species is covered with series of small grains, after the style of a double cut file.

27.—TORNATINA GRACILIS.

Bulla gracilis (TORNATINA), A. Adams, in Sowerby, Thes. Conch., vol. 2, p. 569, pl. 121, fig. 36.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud. China Sea. (Cuming.)

28.—TORNATINA FUSIFORMIS.

Bulla fusiformis (TORNATINA), A. Adams in Sowerby, Thes. Conch., vol. 2, p. 570, pl. 121, fig. 37.

Tornatella bullata, Kiener, Iconographie des Coquilles, pl. 1, fig. 4.

Hab. Evans' Bay, Cape York, North Australia, 6 fathoms, sand; Bet Island, Torres Straits, 11 fathoms, sand and coral; Warrior Island, Torres Straits, found in shell sand on the beaches; Port Jackson, New South Wales. (Brazier.) China Sea. (Cuming).

29.—TORNATINA VOLUTA.

Bulla voluta, Quoy et Gaimard, Voy. de l'Astrolabe, tome 2, p. 359, pl. 26, fig. 33, 35.

Bulla poluta (TORNATINA), A. Adams in Sowerby, Thes. Conch., vol. 2, p. 566, pl. 121, fig. 24.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

One single living specimen found.

30.—TORNATINA BIPLEX.

Bulla biplex (TORNATINA), A. Adams in Sowerby, Thes. Conch, vol. 2, p. 568, pl. 121, fig. 33.

Hab. Darnley Island, Torres Straits, 25, 30 fathoms, sandy mud; York Island, Torres Straits, 13 fathoms, hard mud.

Brought up on the fluke of the ship's anchor.

31.—TORNATINA, SP ?

Hab. Off Katow, New Guinea.

Two specimens dead and worn, from 8 fathoms, sandy mud and coral.

32.—VOLVULA ANGUSTATA.

Bulla angustata (VOLVULA), A. Adams in Sowerby, Thes. Conch., vol. 2, p. 596, pl. 125, fig. 153.

Hab. Off Katow, New Guinea, 8 fathoms, sandy mud and coral.

FAMILY BULLIDÆ.

33.—BULLA TRIFASCIATA.

Bulla trifasciata, Sowerby in Reeve, Conch., Icon., pl. 1, sp. 1.

Hab. Hall Sound, New Guinea; found on the reefs, Solomon Islands. (Brazier).

I take this to be only a variety of *Bulla ampulla*, Linn.

34.—BULLA AUSTRALIS.

Bulla australis, Quoy et Gaimard, Voy. de l'Astrolabe, tome 2, p. 357, pl. 26, fig. 38, 39.

„ „ Sowerby, Thes. Conch, vol. 2, p. 576, pl. 122, fig. 64, 65, 66.

„ „ Reeve, Conch. Icon., pl. 4, sp. 12.

Hab. Home and Palm Islands, North-East Australia; Bet and Darnley Islands, Torres Straits, found inside the reefs on sandy mud flats; Port du Roi George. (Quoy and Gaimard). Tahiti. (Cuming). Fiji Islands. (Brazier).

35.—HAMINEA PAPYRUS.

Bulla papyrus (HAMINEA), A. Adams in Sowerby, Thes. Conch., vol. 2, p. 582, pl. 124, fig. 101.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud; Shores of Borneo. (Cuming).

36.—HAMINEA, SP ?

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud; specimens dead and sea worn.

37.—HAMINEA DECORA, N. SP.

Shell ovately cylindrical, white, thin, pellucid, longitudinally finely striated, transversely striated with 16 deep engraved lines, rather wide apart, eight being at each end; centre smooth, aper-

ture rather wide, outer lip slightly arched, somewhat acuminately produced above, expanded below; columella nearly straight, reflected, producing behind it a minute umbilicus.

Length, 3 lines; breadth, $1\frac{1}{3}$ lines; alt., $1\frac{1}{4}$ lines.

Hab. Cape Grenville, North-East Australia, 20 fathoms, sandy mud; Albany Passage, Cape York, North Australia, 11 fathoms, sandy mud and broken shells.

This species differs very much from *Haminea ambigua* (A. Adams), the centre of the shell being smooth, and each end having eight deep transverse engraved lines, whereas *H. ambigua* is entirely transversely striated.

38.—Haminea vitrea.

Bulla vitrea (Haminea), A. Adams in Sowerby, Thes. Conch., vol. 2, p. 583, pl. 124, fig. 102.

Hab. Bet Island, Torres Straits, found inside the reefs on the sands; Philippine Islands. (Cuming).

39.—Scaphander multistriata, n. sp.

Shell white, thin, transparent, oblong ovate, transversely, obliquely, and closely striated, attenuated towards the spire; spire truncated, slightly umbilicated; aperture, pyriform; outer lip slightly inflected above, from the centre to the base widely expanded, a little thickened; columella obliquely somewhat faintly plicated.

Length, $3\frac{1}{4}$ lines; breadth at spire, 1 line; at centre, $1\frac{3}{4}$ lines; base, $1\frac{1}{3}$ lines; aperture circle at spire, $1\frac{1}{4}$ lines; at centre, $1\frac{1}{2}$ lines.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

40.—Atys naucum.

Bulla naucum, Linn. Syst. Nat., p. 1183.

„ „ (Atys) A. Adams in Sowerby Thes. Conch., Vol. 2, p. 584, pl. 124, fig. 107, 108, 109; Reeve Conch. Icon., pl. 1, sp. 1, a, b, c.

Hab. Palm Island, North East Australia; Darnley Island, Torres Straits, found inside the reefs on sandy mud flats; New

Ireland, New Britain, and Solomon Islands. (Brazier); Phillippine Islands. (Cuming.)

41.—ATYS SOLIDA.

Bulla solida, Brug. Dict. Sci. Nat., No. 5.

„ „ (ATYS) A. Adams in Sowerby, Thes. Conch., Vol. 2, p. 585, pl. 124, fig. 113, 114.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

42.—ATYS ELONGATA.

Bulla elongata (ATYS) A. Adams in Sowerby, Thes. Conch., vol. 2, p. 587, pl. 125, fig. 121.

„ „ Reeve Conch. Icon., pl. 2, sp. 8.

Hab. Darnley Island, Torres Straits, 25, 30 fathoms, sandy mud.

43.—ATYS CYLINDRICA.

Bulla cylindrica, Helblings, Chem., p. 146, fig. 1356, 1357.

„ „ (ATYS), A. Adams in Sowerby, Thes. Conch, vol. 2, p. 585, pl. 125, fig. 114.

„ „ Reeve, Conch., Icon., pl. 2, sp. 7.

Hab. Bet Island, Torres Straits, 11 fathoms, sand and broken shells.

44.—ATYS DARNLEYENSIS, N. SP.

Shell elongately oval, rather thin, shining, white, attenuated and umbilicated at both ends, longitudinally obliquely plicated, strongly transversely striated at each end, the centre or intermediate space with fine irregular waved striæ, sometimes straight; outer lip thickened within, nearly straight posteriorly, slightly twisted and produced; inner lip at the anterior end forming a thin callus ridge at the side of the umbilicus, slightly reflected, and ending in a dentiform plate.

Length, 6½ lines; breadth, 3 lines.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

45.—ATYS CHEVERTI, N. SP.

Shell sub-cylindrical, white, thin, transparent, smooth and inflated in the middle, transversely striated at both ends, the upper

striæ extending nearly to the centre; aperture narrowly linear, wide below, outer lip slightly twisted and posteriorly produced, inflected and angled in the centre; inner lip anteriorly, with a strong fold.

Length, 3 lines; breadth, $1\frac{1}{2}$ lines.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud; Cape Grenville, North-East Australia, 20 fathoms, sandy mud.

This species is like a miniature *Atys elongata*. Some specimens have an opaque appearance at the back of the aperture, others very thin and transparent.

46.—ATYS PULCHRA, N. SP.

Shell cylindrical, white, thin (under the lens), longitudinally closely plicated, and transversely very finely striated, giving the shell a rugose appearance, very minutely umbilicated at both ends; aperture rather narrow, wide below; outer lip thin, reflected inside, slightly posteriorly produced; columella with a slight curve, minutely expanded and reflected, leaving half the umbilicus covered.

Length, 3 lines; breadth, $1\frac{1}{2}$ lines.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

A pretty little species, having the whole surface of a rugose appearance, the transverse sculpture being quite distinct. In some specimens the columella is sometimes straight and not curved.

47.—ATYS DENSA, N. SP.

Small, oval, thick, dirty white shell, finely plicated, strongly transversely striated; interstices with finer lines (as seen under the lens); aperture narrow, wide below; outer lip regularly arched, posteriorly produced, anteriorly twisted and produced, partly covering the umbilicus.

Length, 2 lines; breadth, $1\frac{1}{4}$ line.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

48.—ATYS DUBIOSA, N. SP.

Shell small, oval, white, thin, shining, umbilicated at both ends, the one at the base the largest, transversely very finely

striated at each end (scarcely visible under the lens) more distinct at the base, intermediate space smooth, ventricose above the centre; aperture narrow, outer lip angled, posteriorly slightly thickened and produced, below straight; columella with a single obsolete plait at the base.

Length, 2 lines; breadth, $1\frac{1}{4}$ line.

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

49.—Atys sp. ?

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

A single specimen was obtained with the back all broken; what remains of the aperture, shows at the base a small dentiform tooth like that in *Atys monodonta*, A. Adams.

Atys sp. ?

Hab. Darnley Island, Torres Straits, 30 fathoms, sandy mud.

One living specimen found, the whole of the outer lip broken off in the dredge; what remain show it to be a thin, fragile shell, finely, longitudinally, obliquely, striated, umbilicated and transversely striated at both ends, the upper striæ nearly obsolete; inner lip twisted and truncated at the columella.

51.—Atys nitida.

Bulla nitida (Atys) A. Adams in Sowerby, Thes. Conch., Vol. 2, p. 589, pl. 125, fig. 127.

Atys nitida, Reeve, Conch. Icon., pl. 3, sp. 24.

Hab. Off Katow, New Guinea, 8 fathoms, hard mud bottom.

52.—Atys tortuosa.

Bulla tortuosa (Atys) A. Adams in Sowerby, Thes. Conch., Vol. 2, p. 587, pl. 125, fig. 120.

Atys tortuosa, Reeve, Conch. Icon., pl. 3, sp. 15 a, b.

Hab. Darnley Island, Torres Straits, 25, 30 fathoms, sandy mud. Off Katow, New Guinea, 8 fathoms, hard mud, one dead specimen found; Philippine Islands, 30 fathoms, sandy mud. (Cuming.)

Family PHILINIDÆ.

53.—Philine Schroeteri ?

Bullæa Schroeteri, Philippi, Moll. Sicil., pl. 20, f. 2.

Bulla Schroeteri (Philine) A. Adams in Sowerby, Thes. Conch., Vol. 2, p. 600, pl. 125, fig. 160.

Hab. Albany Passage, Cape York, North Australia, 11 fathoms, sandy mud.

54.—Philine Angasi.

Bullæa Angasi, Crosse, Journal de Conch., 1865, p. 38, pl. 2, fig. 8.

Philine Angasi, Angas, Proc. Zool. Soc., London, 1865, 1867.

Bulla Angasi, Angas (non Crosse) Proc. Zool. Soc., 1865, 1867.

Philine Angasi, Sowerby in Reeve, Conch. Icon., pl. 1, sp. 4.

Hab. Long Island, Torres Straits, one specimen found dead on the sand, Port Jackson, New South Wales, 5 fathoms, mud and sandy mud. (Brazier). St. Vincent's and Spencer's Gulf, South Australia. (Angas.) Port Darwin, North Australia. (Bednall.)

Family APLYSIIDÆ.

55.—Dolabella Rumphii.

Dolabella Rumphii, Cuv. Ann. du Mus., Vol. 5, p. 437, pl. 29, fig. 1.

Limax marina, Rumphius, Thes. Ann., pl. 10, f. 6, pl. 40 fig. 11.

Dolabella Rumphii, Lam. Anim. Sans. Vert., tome 6, second part, p. 42 ; *Doris verrucosa*, Gmel. Syst. Nat., p. 3103.

Dolabella scapula, Martyn, Univ. Conch.

Hab. Dungeness and Darnley Islands, Torres Straits ; Low Island, Trinity Bay and Home Islands, North East Australia, on the reefs under coral in small pools ; Port Jackson and Bellinger River. (Brazier.)

56.—DOLABELLA ECAUDATA.

Dolabella ecaudata, Rang. Hist. Nat. des Aplys. pl. 2, p. 47, No. 2.

Hab. Home Islands, North East Australia.

57.—APLYSIA SP. ?

Hab. Three miles south of Fitzroy Island, North East Australia, found on floating weeds.

On some Australian Species of *Trochocochlea*, by the Rev. J. E. Tenison Woods, F.G.S., &c., Corr. Mem. L.S., N.S.W.

The genus *Trochocochlea* was first proposed by Klein, in 1753 (*Tentamen methodi ostracologicæ, L.B.*, 1753, p. 42, *ita. Hermannsen Indicis*, p. 616), for a genus which cannot now be recognized, as it includes several genera, and includes families. He derived the name from τροχός, a wheel, and χοχλίας, a helix. The name has been revived by Messrs. H. and A. Adams (*Genera*), and is by them defined thus:—Shell conoidal, imperforate in the adult; whorls smooth or transversely lirate, the last rounded at the periphery; aperture nearly rhomboidal; columella thick and rounded, ending in a slightly prominent tubercle. The same genus has been named *Trochius* by Leach, *Gibbium* by Gray, *Osilinus* Phil., *Labio*, Gray, not Oken, *Melagraphia*, Stentz. Messrs. Adams give a list of twenty species, but they do not include our *T. Australis*, or, as it is better known, *T. striolata*. If the genus is to be maintained it should be added that the shell is nacreous, and the operculum, being horny, multispiral, and central; the mantle with small fringes and six to eight tentacular appendages. The odontophore is trochoid, or that which is generally seen in the family, namely, one prominent central tooth, three or four long, curved, lanceolate laterals, and an arcuate comb of uncini.

We have three well-known forms round the Southern Coasts of Australia and all Tasmania, *T. constricta*, *T. tæniata*, and *T. australis*. The two first are doubtfully separated from one

another, and I believe are only varieties; the third named has a host of synonyms. *T. constricta* is mainly distinguished by its round keels. It is marked in Port Jackson with broad reddish brown zigzag bands on a dull yellow ground; raised and very prominent rounded keels, and somewhat corrugated fine transverse and oblique striæ. It is this form of the shell which Messrs. Quoy and Gaimard describe as *T. tæniata*. The other variety which more strictly deserves the name of *tæniata*, has obsolete keels, and the transverse striæ are less pronounced; the shell is more oblique and conical, and marked with numerous zebra-like fine zigzag black, brown, reddish, or green lines; the name *T. tæniata* is, however, clearly a synonym for *T. constricta*. If it be applied to the variety with the fine stripes it is not the one to which Messrs. Quoy gave the name. But I doubt whether there is any use in preserving the name at all. As far as my observations go no permanent mark of distinction between the two varieties can be relied on. There seem to be some differences in the animals, but in the same variety they differ from one another to the same extent. There is no difference in the odontophore or lingual ribbon, which I shall describe further on.

I now give some history of the synonomy of the species :—

Trochus Tæniatus, Quoy and Gaimard, *Voyage de l'Astro.*, *vol.* 3, *p.* 251, *pl.* 63, *figs.* 15, front view 16, back view 17, animal.

This figure is the largest of the genus now recognised as *Trochocochlea*. It appears to me like a "striped" *Trochocochlea constricta*, but I have only met with specimens thus striped on the N. S. Wales coasts. The following is the text :— *T. t. ovata conoidea, imperforata, crassa, basi dilatata, rotunda, transverse carinata, lutea, vittis longitudinalibus undulatis subrubris aut fuscis ornata, labro albo, intus sulcato, peristomata tæniata, columella lævi.*

I translate the following observations :— "It is astonishing that this remarkable species, so common on the rocks about Port Jackson, has never before been figured. It is solid conical, elevated, dilated and rounded at the base, strongly keeled on three whorls, which are rather rugged. The aperture is semi-circular, white, slightly nacreous and grooved; the peristome forms a

kind of distinct band which is not nacreous, greenish and spotted with brown; the columella is flattened and without a tooth. This *Trochus* is yellowish, or whitish, with wide longitudinal wavy undulating stripes, reddish or brownish in colour. They extend the whole length of the shell, and are taken up at each whorl from the suture. The colour of the animals, eyes, tentacles, under part of the foot, laminated fringes and eight tentacles is pale greenish; the mouth is black above and yellow at the point, capable of much dilatation, and fringed below; the foot is black laterally with a transverse green band; the operculum is round and somewhat large. This *Trochus* is found in company with *T. multicarinata*, with which it must not be confounded. Its conical form distinguish it more easily than its stripes, for there are varieties of *T. multicarinata* which have also reddish stripes. Length, 1 inch 2 lines; diameter of base, 11½ lines."

The plate accompanying this description is a large *Trochocochlea constricta*, with brown oblique bands very plainly marked on a yellow ground.

The authors then go on to describe *T. multicarinata*, which I think will evidently appear from their description to be no more than a variety—if indeed a variety—of *Trochocochlea constricta* of Lamarck, described in another place (*Anim. s. verteb., tom. 7, p.* 36, *No.* 15) as *Monodonta multicarinata*. First they give L.'s diagnosis, then add—"There are varieties of shape and colour in this shell which would make it pass insensibly into the preceding species, although the extremes differ. But we do not hesitate to consider it as a species whose type is shorter, more circular and dilated at the base, with a sharper spire than the striped *Trochus*. Its keels, which very regularly amount to seven on the last whorl, are separated by deep channels. Its aperture is semi-circular, white, with only two or three keels, and on its limb (outer lip?) which is smooth, a black line. The shell is dull yellowish, and sometimes covered with red or brown zigzag flames, then it resembles the preceding. The animal has long pointed greenish tentacles, dotted with black; the stalks of the eyes are triangular, black, like the sides of the feet and the

upper part of the mouth," &c., &c. The dimensions are then given as 8 lines long and 7 lines for the diameter of the base. These dimensions do not agree with Lamarck's, who in the place quoted gives a base of 10¼ lines, which agrees more with what we know of *T. constricta*.

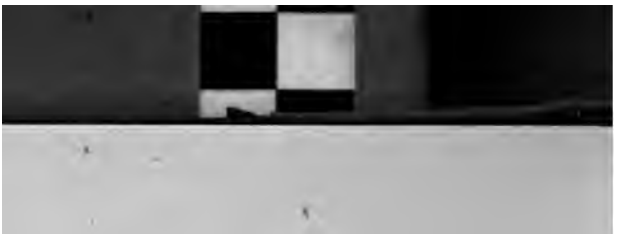
I now add my own notes of *Trochocochlea constricta* from Tasmanian specimens, and mostly from South Tasmania (Southport), where the species attains its largest size. Shell oblique, obtusely conial, dull or faint pink when fresh from the water, and yellowish when dry, and having a coarse chalky appearance; whorls four to five, tumidly convex, furnished with seven to eight conspicuous rounded keels on the body whorl, and two on the others (the one nearest the suture being the largest and most prominent); the whole shell marked with fine oblique lines of growth; mouth, sub-auricular; outer lip, double; outer margin, *calcareous pinkish*; grooved at the keels, where it is often stained a deep black, or sometimes the whole lip is black; throat nacreous, silvery, with little colour, with a few well-defined and prominent liræ; columella, pure white, ending in a blunt tubercle; enamel slightly spread over the base, on which also three or four ribs are marked with spiral black lines.

I now subjoin my notes of the striped variety from the same locality. The shell is always smaller. It has less distinct and smoother keels of equal size, at most eight, on body whorl, and sometimes less. The colour is pinkish, or even reddish, with zigzag longitudinal flames of blue black, which in very dry and old shells become a reddish brown or green; outer lip generally margined with black, throat of darker nacre, grooves of keel scarcely perceptible on outer lip, and liræ of the throat seldom visible; columella, brownish; tubercle almost obsolete. The liræ of the throat are always present in the N.S.W. specimens.

The differences between the animals seem to consist first in the colour; *T. constricta* is almost black, the base of the foot being neutral tint, while *T. tæniata* is pale green and olive, with a little black at the sides of the foot. Both have the mouth fringed, but

T. c. has the eight filiaments at equal distances along the sides, and *T. t.* has four at each side close together and posterior. The tentacles are conspicuously celiated in *T. c.*, but with fewer hairs in *T. t.* The following are my notes on the odontophore of *T. c.* (lingual ribbon) as seen with a binocular, $\frac{1}{2}$ inch objective and reflected light:— One central broad quadrate tooth with semicircular edge; laterals five on each side, long, linear, curved with broad rounded edges; they are close together and increase in size towards the margin. The laterals are flanked by a close series of uncini, which are disposed in combs curved spirally, and appear like a rope with close strands; the latter is a feature common to all the *Trochidæ*, but here the uncini are longest in the centre of the comb. The plates of the teeth are very peculiar, the central one spreading like a broad rhomboid with a narrower square base, which is plainly seen through the transparent substance. The laterals have also a plate which overlaps the next succeeding; the transverse series is a curved line. The odontophore of *T. c.* was in all respects similar.

I come now to Quoy and Gaimard's *Trochus striolatus*, which goes by the name of *Trochocochlea striolata* and *T. concamerata*, but which was formerly, I believe, described by Lamarck as *Monodonta australis* (*Anim. s. vert., vol.* 7, *p.* 35, *No.* 11) Chemnitz. Its synonomy I shall notice presently. Quoy and G. thus describe it:—"*T. t., ovato-conoidea, imperforata, solida, transversim sulcata, nigricante, lineolis luteis longitud, ornata, apertura semicirculari, alba, fauce angusta.* This *Trochus*," they continue, "is round, slightly globose and transversely grooved. Its aperture is semi-circular, of a white nacre, and bounded by a double lip; its columella is slightly bidentate; its colour is a deep black, agreeably chequered with yellow in very fine lines lengthwise, and like spots on each groove. It has some relation to the strawberry *Monodonta* of Lamarck. Its aperture is different, its ribs more marked, closer together, and its line of spots more regular. The animal has villous tentacles, brown and clear, the eye stalks thick; tentacles, as well as the lateral fringes of the front green, with eight filiaments of the same



colour; the foot is yellowish-white below, black above, as also the mouth, which, however, is greenish near the mouth. *Hab.* Sydney, Port Jackson. Height and diameter of the base, 9 lines."

I find the same shell discribed thus, by Angas, in the Zool. Proc., for 1867, p. 216:—"No. 193. *Trochocochlea concamerata. Mondonta* c. Gray, *Wood's Index. Test. Suppl. pl.* 6, *fig.* 35. Faintly ridged, and painted with irregular wavy longitudinal lines of yellow on a black ground. *L. (sic.*, misprint for T. ?) *striolatus* of Quoy, from Tasmania and S. A., is much more depressed, and has a tesselated style of painting, although regarded as a synonym by Mr. Hanley in his edition of Wood's '*Index*.' Same locality as preceding. Long, 1 inch, 4 lines."

Yet, I am afraid we must uphold Hanley's ruling. In the first place, as we have seen Messrs. Quoy, and G. distinctly state that they got their specimens from Port Jackson, and not from Tasmania. Next the Tasmanian specimens in some instances answer to Mr. Angas's description of them, and sometimes not. The truth is that the shell is very variable. It is without exception, the commonest shell in Tasmania. Turn over any flat stone at low water, and the under side will be found covered with it, of almost every size, shape, and colour, within the limits of the shell's character. I have seen some specimens more than an inch in diameter, some almost conical, some depressedly turbinate, some white, with green spots, some black and yellow on diagonal lines, and some dull olive, with few yellow spots.

I now subjoin what I believe to be the synonomy of the species:—

Trochocochlea australis, Favanne, Conch., pl. 18, *fig. A* 1; *Le Ratelier, Chemn. Conch., tome* 11, *tab.* 196, *fig.* 1890.

Monodonta australis, Lamk., vol. 7, *p.* 35, *No.* 11.

T. concamerata, Gray, Wood's Index, Test. Suppl., pl. 6.

T. striolatus, Quoy and G., loc. cit. Angas, loc. cit.

In the *Encycl. Meth. Hist. Nat. des Vers, tome* 3, *p.* 1081, we find the following notice of the shell by Deshayes:—"This

shell constitutes a very distinct species. Its form brings it near certain Turbos. It is ovately conical, sub-globose, spire somewhat exsert obtuse, whorls 5-6, convex, suture simple, shallow. Last whorl very large, globose, very convex below, and obtuse at the periphery. Surface entirely grooved transversely, grooves shallow, slightly rounded, simple and never granulose, those beneath the last whorl narrower than the others. Aperture small, and somewhat like *Trochus labio*. Outer lip very thick, divided into two; interior clear white, with rather deep transverse grooves. The columella is very thick, *with a wide exterior surface*, obscurely shagreened at the end. The sinus of the middle deep; the tooth less prominent, and not rough, groove separating it from the outer lip, less deep than in *T. labio*. Colour somewhat variable, sometimes on a reddish, sometimes on greenish ground. The transverse grooves are ornamented with square white spots. Shell very thick and solid, rather rare in collections. Found in the seas of New Holland. Diam. 34, Alt. 36 mil.

I have marked with italics a distinctive feature of the columella, which is also concave.

I may remark that old and very dry specimens of dead shells have the reddish ground here referred to. I should say that the specimens came from the north of Port Jackson.

T. porcata, A , Ad. This shell is quoted by Angas, (*Proc. Zool. Soc.*, 1867, *p.* 216, *No.* 191), as a *Trochocochlea*, of which he gives the following diagnosis :— "The whorls are strongly carinate, and ornamented with narrow rose-coloured stripes, longitudinally. It is equally common with the foregoing species (*T. tæniata*). Length, 11 lines."

But this description does not correspond with the original diagnosis of Adams, (*P. Z. S.*, 1851, *Monograph of Trochidæ*, *p.* 179, *genus*, 15, *Labio*, *No.* 22), which is as follows :—"*Labio test ovato-conoidea, imperforata, fusca, albo reticulata; anfr, convexis transverse carinatis ; carinis numerosis, elevatis, distantibus, labio albo, inferne subcalloso, labro intus sulcato.*"

As no dimensions are given, this is somewhat unsatisfactory, but it applies much more to *T. australis*, than to any other. Mr. Angas's short diagnosis on the contrary, applies to *T. taeniata*. The specimens seen by me in the Museums of Melbourne, Sydney, Hobart Town, and Dr. Cox's extensive private collections, were all *var. taeniata*. Some obtained by Mr. Brasier, from Mr. Angas, were all young shells of *T. constricta*.

The conclusions I derive from these considerations, are—

1st. That we have commonly at most only three species of *Trochocochlea* on our shores, viz., *T. constricta*, *T. taeniata*, and *T. australis*.

2nd. That *T. constricta* and *T. taeniata* can only doubtfully be separated from one another.

3rd. That both these species are subject to great varieties of colour and form. *T. constricta* being the larger in Tasmania, and probably the smaller in South Australia, or else these being varieties of only one species, the smaller and larger varieties interchange their characters.

4th. That *T. striolata*, *T. concamerata*, and *T. porcata*, are all synonyms; the first two for *T. australis*, the last for *T. constricta*. Lam.

All these shells are distinguished by the lining of the upper whorls being non-nacreous, and of a beautiful malachite green. I noticed also in some places on the Tasmanian coast, a certain form intermediate between *T. c*, and *T. t.*, in which the whorls were very obtuse, the shell large and smooth, and painted in zig-zag lines of vivid bluish green, and white. The upper whorls and apex were much corroded, and of silvery nacre. This variety always flourished on modern basaltic rocks in Recherche Bay, and elsewhere, where no other mollusca seemed common, and often where the water was brackish. It was a large shell, and the keels are almost completely obsolete.

It is a remarkable fact, that the larger shells of these species are found in S. Tasmania, and they become smaller, more decidedly ornamented, and highly coloured as they approach the tropics.

The Lizards of the "Chevert" Expedition,

By William Macleay, F.L.S.

SECOND PAPER.

Family GECKOTIDÆ.

28.—Diplodactylus annulatus.

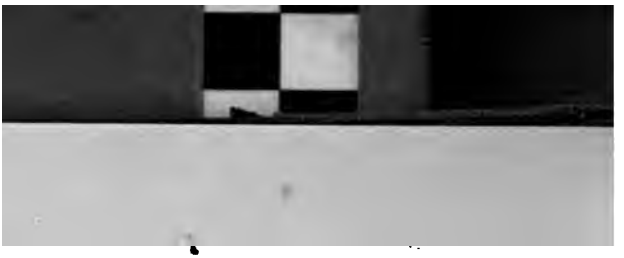
Subelongate; internasal shields small, contiguous and rounded behind; chin shields, four, the first pair rather large, lozenge-shaped, and meeting behind the rostral, the others small and round; upper labials seven, lower six, the last of each small; scales, on the head granular, getting rather larger towards the muzzle, on the back minute and thickly interspersed with flattish lightly carinated tubercles, on the ventral surface smooth, and on the tail, above, strongly carinated and forming raised rings, beneath smooth, with broad shields; preanal pores, five, in a straight transverse line; colour, above yellowish white, prettily marked all over with dark brown, beneath yellowish; the tail, which is slight, tapering, and longer than the body, is ringed throughout with alternate yellow and black bands.

Total length, 3½ inches.

Hab. Palm Islands.

29.—Peripia papuensis.

Muzzle rather obtuse; chin shields four, the two next the rostral lozenge-shaped, and a little longer than the others; labial shields nine in both jaws; eyes large, surrounded by a ring of small white scales; pupil elliptical; scales immediately in front of the vent very small, above these two or three transverse series of scales, extending on to the thighs larger than the other abdominal scales, the whole upper surface studded with irregular rows of small tubercles, which on the tail are elevated and pointed, and assume the appearance of rings; plates beneath the toes large, and as long as broad; tail depressed, tapering;



colour above a minutely dotted grey, beneath yellowish white, each scale having one or more minute brown dots invisible to the naked eye.

Length, 3½ inches.

One specimen from Katow.

30.—Peripia ornata.

Chin shields numerous, but very small; labials twelve on each jaw; pupil elliptical; toes with five pairs of plates at the extremity, and single plates behind; tail cylindrical, pointed; preanal pores 25 in a curved transverse line; colour yellowish grey, prettily marked with numerous irregular wavy bars of brown and yellow, and with a longitudinal band of brown along the side of the head and neck.

Total length, 8 inches.

Hab. Port Moresby.

31.—Peripia longicaudis.

Form slightly depressed, muzzle obtuse; chin shields six, the middle pair pentagonal and elongate, the next shields smaller, the outer one on each side small and round; upper labials nine, lower seven, all becoming smaller from the muzzle backwards; pupil elliptical; ear opening oblong; toes dilated towards the point, with seven short broad divided plates beneath; claws small; tail longer than the body, slightly depressed and tapering to a fine point, with the central scale on the under surface large; colour, pale mottled grey above, yellowish beneath.

Length, 3½ inches.

Hab. Endeavour River.

There is a good deal of the character of the genus *Gehyra* about this species, but Gray's generic descriptions compel a separation.

32.—Peripia dubia.

A small round shield between the internasal shields in a depression which extends to the middle of the rostral; chin shields six or more, the middle pair elongate, the rest getting gradually

shorter; upper labials eleven, lower nine; pupil elliptical; ear opening oblique, oval; toes dilated with about eight pairs of very short and broad plates beneath; preanal pores fifteen; tail shorter than the body, round and tapering, with a row of broad plates beneath; colour above yellowish brown, marbled with darker, beneath yellowish.

Length, 4 inches.

Hab. Cape Grenville.

This species also is quite of the *Gehyra* type, but the plates beneath the toes are distinctly divided.

33.—Peripia marmorata.

Muzzle obtuse; a deep rectangular emargination on the upper part of the rostral shield, and a space between the internasals filled with granular scales; upper labials twelve, the last three or four small, lower eleven, the last three very minute; chin shields as in the last species; ear openings large and deep; toes much dilated, with ten or twelve very short and broad pairs of plates beneath; tail much shorter than the body, slightly depressed and tapering gradually to a point, with the middle scales beneath larger than the others, but not so wide as those of the last species; form rather robust and flat; colour above, marbled black, brown, and grey, beneath dingy white.

Length, 6 inches.

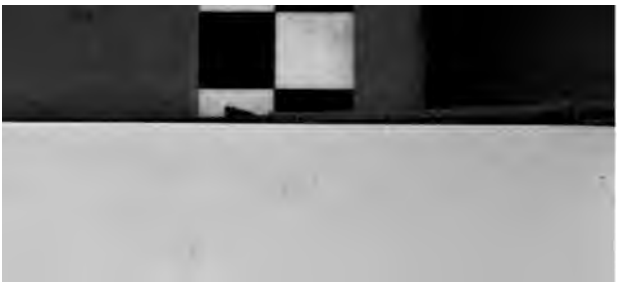
Hab. Katow.

34.—Peripia brevicaudis.

Form robust and rather depressed; tail short, somewhat depressed, broad and strangulated at the base and pointed at the tip; rostral and internasal shields as in the last species; chin shields with smaller ones at the sides; labials about nine above and below, the posterior shields minute; ear openings small and round; preanal pores thirty-one; toes dilated with about ten short and broad divided plates beneath; colour reddish-brown, varied with black and grey.

Length, 6 inches.

Hab. Darnley Island.



34.—GEHYRA OCEANICA.

Gray, Z.M. 57—Cat. Brit. Mus., p. 163.

Gehyra gularis, Gray, B.M.

Gecko oceanicus, Less., Voy. Coq., t. 2, fig. 3.

Hemidactylus ovalensis, Dum. and Bib., Erp., gen. iii, 350, t. 28, fig, 7.

One specimen from Port Moresby. It differs somewhat from the specimens I have from Fiji, but from my single specimen I can scarcely venture to make a new species.

35.—HETERONOTA FASCIATA.

Form elongate; head broader than the neck; internasal shields medium size and not contiguous, two granular scales intervening; upper rostral large, truncate behind, and depressed in the middle; under rostral very large and triangular behind, with a small subtriangular plate in the angle formed between it and the first labial; labials seven on each side above and below, the two last shields very small; eyes large, with a heavy scaly curtain above, pupils round; ear openings distinct, round, the tympanum not deep; scales on the back granular, with about ten irregular series of roundish tubercles, each with several minute keels or striæ, those on the legs and under surface of the body small, round, convex, and bicarinate, and those on the tail larger, oval, unicarinate, and in concentric rings; legs long and slender; tail about the length of the body; colour mottled grey, with brownish cross bands of irregular form from the muzzle to the base of the tale.

Length, $3\frac{1}{2}$ inches.

Hab. Hall Sound.

36.—HETORONOTA MARMORATA.

Form moderately elongate; internasal shields very short and contiguous, chin shields smaller and more rounded than in the last species; upper labials 8, the last two very small; lower labials 6, the last one very minute; pupil elliptical; ear openings round; scales on the back, as in the last species, but with the

tubercles much more numerous; tail round, tapering, about the length of the body, very slightly ringed, and with the scales beneath smooth, but not large; colour, above, yellowish brown, spotted and barred with deep brown or black, under surface dingy yellow. Length, from 3 to 4 inches.

I have specimens of this lizard from Fitzroy Island and Endeavour River. It seems to approach very nearly to *Heteronota Binoei*, Gray, excepting in the tail, which, in that species is described as having a series of broad shields underneath.

37.—Heteronota eboracensis.

Form rather robust; head broad; tail much shorter than the body; internasal shields rather short and not contiguous, labials 9 upper and 8 lower, the last two of each very small; scales mostly tricarinate; tubercles on the back numerous and nearly smooth; scales on the tail all smooth; colour, above speckled grey and black, legs and under surface pale with numerous minute black dots.

Length, 3 inches.

Hab. Cape York.

Family AGAMIDÆ.

38.—Tiaris papuensis.

Head subtriangular, rounded in front, rather concave above, margined by an angular slightly curved ridge from the eye to the muzzle, flat on the sides and swollen behind; rostral shield more than twice as broad as high, and slightly emarginate in the middle with a row of small hexagonal smooth plates behind; lower rostral rounded behind and as broad as long; upper labials 11, the first seven subequal, the eighth square, and the last three low and elongate; lower labials 10, the first eight subtetragonal, the two last low and elongate; eye large, deep, and surrounded by many series of small scales; ear openings large and round with the drum superficial; nostrils oblong in the upper part of a shield of the same shape; occipital plate white, nearly round, in the centre of a deep transverse furrow at the back of the head;

smooth plates of various sizes occupy the whole side of the head from the muzzle to the ear, and beneath the ear on the swollen part of the head are three rows—4, 3, 2,—of large white, smooth plates; beneath the lower labial shields are also two or three series of smooth but small plates; gular pouch large, longitudinally folded, attached to the breast between the fore legs. and covered with small keeled scales becoming smaller behind; a crest of high, obtusely-pointed, very compressed scales sloping backwards, but not arcuated, extends from the back of the head to the first-fifth of the tail with a short break over the fore legs; a slight skinny ridge extends from the front of the shoulder along the side to near the hind legs; scales all keeled, those near the back square and pointing upwards and backwards, those on the sides pointing backwards, those on the belly larger, more acutely keeled and converging towards the centre, those on the legs like the belly, on the soles of the feet small, and on the tail largest, the keels forming longitudinal angular ridges; legs long and moderately robust; general form very compressed, especially towards the back; tail very long, taper, and moderately compressed; colour of the head, dark brown above with a few white scales of rather larger size than the others, and whitish on the sides and underneath with a few dark lines under the chin, and with the back part of the pouch reddish brown; back and sides of the body whitish yellow, marked with patches of black scales, a portion of the sides behind the shoulder being much darker; under surface dingy yellow; a broad, curved, whitish patch extends from the head behind the ear to the shoulder; the tail is more or less distinctly marked throughout by imperfect, broad, brown rings.

Total length, 2 feet 6 inches, of which the tail occupies 1 foot 9 inches.

One specimen was taken at Hall Sound.

This species differs from *Tiaris meyapogon* (*Lophyrus dilophus* of Dum. and Bibr.) which is also from New Guinea, in many important particulars, judging from Dumeril and Bibron's description and plate.

39.—Tiaris Longii.

This species answers in many respects to the description I have given above of the last species, I shall therefore only notice the points in which the two species differ.

Head black, depressed between the eyes and widely furrowed on the occiput with a very small occipital plate; rostral shield not emarginate above, with four small square, smooth plates behind; under rostral subtriangular; upper labials long and low; lower labials 9; angle of the head under the ear much swollen, and with only a few large scales or plates; gular pouch entirely black, longitudinally folded, with a cross angular fold behind; crest scales not so long on the neck before the interruption as in the last species but more numerous, on the back high and a little arcuated, on the tail lower and ceasing at one-third of the length; general colour, brown above, with a few yellow marks, and dingy brown below, getting lighter towards the tail, which is much compressed and faintly ringed with brown and yellow.

Total length, 2 feet 4 inches, tail 1 foot 10 inches.

This is the first of the genus I have heard of as being found in Australia.

My specimen was presented to my Museum by Mr. Mark H. Long, of William-street, after whom I have named it, and was taken in some part of Northern Queensland.

40.—Lophognathus lateralis.

Head subtriangular and flat above, with an angular margin; rostral shield three times broader than the height, smooth, and of a white colour, with five smooth small white plates behind; gular pouch very small, but showing several folds marked more or less with smooth, ivory-looking scales; the posterior angle of the head under and behind the ear armed with a compressed, sharp-edged, protruding ivory-looking process; an erect crest of compressed, triangular, obtusely-pointed scales on the nape, continued along the back and beginning of the tail by shorter compressed, spiny-pointed, firm scales; all the scales keeled, those on the legs, ventral surface and tail largest; the whole upper

surface and sides of a deep chocolate brown, with a broad, well-defined streak of reddish yellow on each side from the ear to the tail; the under surface brownish yellow; sides of the head under the line of the nostril, eye and ear white, or nearly so; tail irregularly and indistinctly barred with yellow and brown, and not compressed.

Total length 1 foot 10 inches, tail 1 foot 4 inches.

One specimen from Katow.

According to the description and plate given by Dr. Gray, of *Lophognathus Gilbertii*, from Port Essington, it is very distinct from the present species, and I am not aware that any other species of the genus has hitherto been described.

41.—GRAMMATOPHORA JUGULARIS.

Scales strongly keeled, and acutely pointed, a few very slightly elevated along the middle of the nape; nostrils small and round, near the centre of a large plate; head, above brownish yellow, with black edged brown spots and rings, one near the muzzle, two occupying the space between the eyes, and a few small ones about the occiput; back yellow, with a series of large, black-edged brown patches down the middle; sides of body and legs of a darker hue, sides of the head and all the under surface white, with 6 longitudinal narrow brown lines indistinct on the body, but distinct under the head, where they join in pairs from the centre outwards; tail irregularly ringed.

Total length, $4\frac{1}{2}$ inches; tail, 3 inches.

Several specimens were taken at Cape Grenville.

Description of some new species of Birds from New Britain, New Ireland, Duke of York Island, and the South-East coast of New Guinea, by E. P. RAMSAY, F.L.S.

NASITERNA PUSILLA, SP. NOV.

Nasiterna pusio, Sclater; Ramsay, P.L.S. of N. S. Wales. Vol. 1, pt. 4, p. 393.

In plumage, much the same as *Nasiterna pusio*, of Sclater (*P.Z.S. Lon.* 1865, p. 620, pl. 35), but differing in having the front, sides of the head and ear-coverts of a light yellow, with but a faint tinge of fulvous, the crown of the head deep blue, lighter in colour and not obscured with black as in *N. pusio*, under surface light greenish yellow, sides and flanks green; abdomen, and under tail-coverts, and spots on the inner web of the tail feathers bright yellow, the two central tail feathers dull blue, and in this specimen, without the oval apical spot of black, or the fulvous tinge at the base of the upper tail coverts, which is visible in *N. pusio*, of Sclater.

Total length, 3·05 inches; wing, 2·3 inches; tail, 1 inch; tarsus, 0·25 inch; longest toe (without nail), 0·45 inch; hind toe, 0·2 inch.

Hab. Dense forests in the neighbourhood of Port Moresby, New Guinea.

NINOX NOVÆ BRITANNIÆ, *sp. nov.*

All the upper surface, rufous brown; the head, face, chest and neck of a similar but duller colour; a few feathers in front and over the eye are spotted irregularly at the base with white, a few on the sides of the neck and chest, spotted with white towards the middle and end of the feathers, in some forming two broken transverse bands; loreal bristles whitish at the base, with black tips; the breast and all the under surface of the body white; the basal portion of the feathers slate colour, the remainder barred with rufous brown; under tail coverts white, with a few spots or broken bars of rufous brown; under wing coverts white, strongly barred with the same tint; back and interscapular region without spots; rump and upper tail coverts with a few white spots, on some of the feathers forming broken white bands; wings rufous brown above, dull brown below, the quills crossed with nine to ten bands of blackish brown, the basal portion of the inner webs becoming white on the interspaces, except on the first five primaries; the first four secondaries show whitish

spots on the interspaces of the outer webs towards the end of the feathers; upper wing coverts barred like the quills, but less distinctly, and show white spots on the interspaces of the outer webs towards the tip; tail rufous brown above, paler dull brown below, crossed with nine or ten dark bars, the interspaces on all, except the centre two quills, becoming whitish towards the base of the inner webs, and spotted with dull white towards the end on the outer webs; * legs and tarsi, rufous brown, shaded with darker; bristles on the feet, yellowish; bill, dusky at the base, light horn colour at the tip; claws, yellowish at the base, blackish at the ends.

Total length, 11 inches; wing, 8·2 inches; tail, 5 inches; tarsus, 1·4 inches; middle toe, 1·15 inches; bill, from forehead, 1·15 inches; from nostril, 0·7 inch; from gape, 1·1 inches; culmen, from cere to tip, 0·8 inch; from the tip of the bill to the back of the head, 2·2 inches.

Hab. New Britain.

I was at first inclined to consider this species identical with the *Noctua variegata* of Quoy and Gaimard, but after a closer comparison of the skin with Dr. Kaup's description of that species, and as I find he states † "*the front, face, and chin, whitish*," which they certainly are not in the bird I have received from New Britain. I have thought it necessary to distinguish this species, under the name of *novæ britanniæ*, although I do not altogether hold with the practice of creating new species upon such trivial, and, which may hereafter prove to be, only local differences. In other respects this species agrees very well with *Ninox (Ieraglaux, Kp.) variegata.*

MYZOMELA COCCINEA, *sp. nov.*

Adult female. The whole of the upper and under surface of the body of a bright rich carmine, duller on the head from the feathers being slightly centered with blackish brown; wings and tail, dull brown; the outer webs of all the feathers, except the first and second primaries, margined with dull carmine; two

* The outermost feathers of the tail are lost. † Trans. Zool. Soc., Lon., Vol. IV. p. 216.

centre tail feathers carmine above, brown below; bill black, slightly curved; legs, blackish brown.

Total length without bill, 3·65 inches; wings 2·23 inches; tail 1·6 inches; tarsi 0·53 inch; bill from forehead 0·6 inch; from gape, 0·68 inch.

Hab. Duke of York Island.

This beautiful species is closely allied to *M. chermesina*, of G. R. Gray, and is of the same rich carmine tint. It is smaller, however, and is of a uniform carmine above and below.

The present specimen is said to be a female, which I am inclined to think correct. The male will doubtless prove to be of a much richer tint.

MYZOMELA ERYTHINA, SP. NOV.

Male, juv. Crown, sides of the head, and all the upper surface dull red; the basal portion of the feathers, dull brown the red tint being brighter on the back and upper tail coverts; the throat is of a lighter and brighter tint; the remainder of the under surface, dull brown washed with dull red, a little stronger on the under tail coverts; wings and tail, dark brown, the outer webs of the feathers margined with dull red of the same tint as the body; bill black; legs and feet blackish brown.

Total length, without bill, 3·1 inches; wing, 1·9 inches; tail, 1·3 inches; tarsus, 0·54; bill from forehead, 0·5 inch; from gape, 0·6 inch.

Hab. New Ireland.

This species is smaller than the preceding, and the bill is comparatively stronger and stouter, otherwise I should be inclined to consider it the young of the former.

Description of some rare Eggs of Australian Birds, and a note on the Eggs of certain Species of *Megapodius*.

By E. P. Ramsay, F.L.S., &c., Curator of the Australian Museum, Sydney, N. S. Wales.

It is now over two years since my friend, Ralph Hargrave, Esq., forwarded to me for description, several rare nests and eggs

of some of our Australian birds, among them those of Smith's Cat-bird, a description of which, I have been for a long time under the impression I had forwarded to the Zoological Society of London. However, as it has not appeared in any of the Society's "Proceedings," I presume I must have forgotten it, or, what is more likely, that it has miscarried, as I find I had described both nest and eggs in my note book a few days after receiving them.

AILURÆDUS SMITHII. *Vig. and Horsf.*

Smith's C ird.

The nest of this species is not un ike that of *Oreocincla lunulata;* it is rounded, open above, and placed between upright forks of trees in dense scrubs and thickly wooded parts of the country; it is composed of rootlets, moss, and shreds of fern bark, &c., and ornamented with green mosses, chiefly a species of *Hypnum* found in the dense and damp scrubs; the lining is chiefly composed of fine rootlets. Height, 2 inches; diameter, 6 inches; depth inside, $1\frac{1}{2}$ inches; diameter inside, $3\frac{1}{4}$ inches.

The eggs are three to four in number, comparatively small for the size of the bird, being in length 1·2 inches by 8·5 inches in breadth; the ground colour is of a delicate bluish green, sprinkled all over with light reddish brown dots and spots, larger and more crowded on the thicker end, and with also a few irregular linear scratchy markings or hair lines.

The nest and Eggs were taken at Stanwell, in the Illawarra district.

HYLACOLA PYRRHOPYGIA. *Vig.*

The red-rumped Hylacola.

The nest of this species is usually hidden at the base of a clump of bushes and grass, or in some bushy shrub near the ground; sometimes resting on the ground, and at all times very difficult to find. I first found them breeding on the Dobroyde Estate, in 1860, where I procured both adults and young. The

nest is a loose structure, composed of narrow strips of bark, grass, and rootlets, (which can scarcely be said to be interwoven), and with which it is chiefly lined with the addition of a few feathers. It is dome-shaped in form, and a little larger than that of *Malurus lamberti*.

The full number of eggs were in every instance three, the ground colour of a pinkish salmon tint, fading after being emptied to a dull white, tinged with chocolate pink, in tint not unlike those of a *Sericornis magnirostris* or *S. fontalis*. They are blotched with irregular markings of light chocolate brown at the larger, and a few dashes and spots of the same tint on the thinner end, the blotches forming a zone near the thick end. Length, 0·76 inch, by 0·57 inch in breadth.

ELANUS AXILLARIS. *Lath.*

The black-shouldered Kite.

During the last six years several pairs of these hawks have been known to breed on the Iindah Estate, on the Mary River in Queensland, but it was only in November last that a pair gave my brother Mr. John Ramsay, an opportunity of taking their nest and eggs, which was not lost.

The nest in question was placed among the topmast forked branches of a Flindersia, and as usual, composed of sticks and twigs; it was not, however, a bulky structure, as is often the case with the Australian hawk's nests.

The eggs were three in number, but my brother assures me that four is the correct number for a sitting. The ground colour where visible is of a dull white, but it is mostly obscured by blotches and smears of dark reddish chocolate.

Length of "a," 1·6 inches; breadth, 1·25 inches.
„ "b," 1·72 „ „ 1·25 „
„ "c," 1·58 „ „ 1·27 „

One specimen, "a," is reddish rusty chocolate, smeared and clouded with a darker tinge.

PARDALOTUS RUBRICATUS, *Gould.*

From recent letters received from Mr. William E. Armit I learn that this species is by no means rare on the Norman River, and is also found rather plentiful on the Etheridge River. It comes as far south as Georgetown, where Mr. Armit obtained the nest and eggs. Like *Pardalotus punctatus*, *P. melanocephalus*, and *P. uropygialis*, this species digs holes or tunnels, in the banks of creeks, &c., making a long narrow tunnel from two to three feet in length, at the end of which it excavates a chamber large enough to contain the nest, which is about four inches in diameter. This round chamber is lined on all sides both above and below with fine grasses, except a small hole for exit opposite the tunnel. The eggs are four in number, pearly white, 0·8 inch in length by 0·6 inch in width towards the thicker end; those at present under consideration are rather pyriform, and more pointed than those of any other species I have seen. Some specimens are a little larger than others.

PARDALOTUS UROPYGIALIS, *Gould.*

This species is also an inhabitant of the Gulf of Carpentaria district. I have seen it in collections from the Norman River, and also received the head, wings, and tail, accompanied with eggs, from Mr. William E. Armit, taken on the Etheridge River, where this gentleman found it breeding in tunnels dug in the banks of creeks and water-courses, &c., in company with *P. rubricatus*.

I can see no difference in the eggs of this and those of the preceding species, except that they are a trifle smaller. The foregoing remarks on *P. rubricatus* are equally applicable to this species also, Mr. Armit assures me that they breed and nest in the same way, and often accompany each other in small troops, searching for insects among the leafy tops of the trees. Both species seem to be confined to the inland districts. I searched diligently for them at Rockingham Bay, but found only the common species, *P. melanocephalus*.

Eggs, four in number. Length, 0·7 inch, by 0·55 inch in breadth, and, like the eggs of all the other species, of a pearly white colour.

As I remarked above, *Pardalotus uropygialis* belongs to the same section as *P. melanocephalus*, *P. rubricatus*, *P. xanthopygius*, and *P. punctatus*, all digging tunnels in the soft banks of creeks, water-courses, &c., to nest in. On the other hand, *P. affinis*, and *P. striatus* (and, according to Mr. Gould *P. quadragintus* also), select holes in hollow branches of lofty trees, where they construct a dome-shaped nest of grasses, just as the other species do at the end of their tunnels. The eggs in all instances are white, oval, and rather pointed. Of *P. quadragintus* I regret to say I know nothing, having never met with it in a state of nature. *P. striatus* and *P. affinis* sometimes select the mud flask-shaped nests of the Fairy Marten, *Lagenoplastes ariel*, which they line afresh with grass and feathers. Their eggs are from four to five in number.

ENTOMOPHILA RUFIGULARIS, *Gould.*

This species is found commonly dispersed all over the Gulf country. It has been found breeding in the neighbourhood of Normantown and Georgetown, during the months from September to March. The nest is a round, open, and neat cup-shaped structure, usually slung by the rim between forked twigs. The one before me, sent by Mr. Armit, was taken from a branch of an *Erythrina*. It is composed of fine grasses, matted outside with white "cobwebs," and lined with fine grasses alone. It is rather a deep nest, being $3\frac{1}{2}$ inches long by 2 inches in diameter.

The eggs are usually two, but sometimes three in number, of a pearly white, rather thickly spotted with bright reddish brown. Length, 0·65 inch, by 0·49 inch in diameter at the thicker end.

The young on leaving the nest have all the upper surface brown, and all the under surface white; the outer webs of the wing quills margined with olive yellow.

POEPHILA ATROPYGIALIS, *Diggles.*

This fine species is distributed over the country between the Gulf and Georgetown, and its neighbourhood, where it is said to be common, along with *Donacola pectoralis*, *Poëphila leucotis*, and *P. personata*. Its nest is an oval structure of interwoven grasses, having an opening at one end partly concealed by long

grasses drawn over the entrance. It is placed among the stronger grasses, or small bushes which grow here and there on the grass flats, or amongst the leaves of the *Pandanus acquaticus*.

The eggs are from five to six in number; in length from 0·6 inch to 0·64 inch; diameter at the larger end from 0·44 to 0·46 inch. The shell is white outside, with a faint greenish tinge inside.

Note on the Eggs of MEGAPODIUS CUVIERI.

Talegallus Cuvieri of Lesson.

Colour of a deep rich bright salmon buff, brighter than that of any other *Megapodius*' eggs I have seen, and resembling most, those of *Leipoa ocellata*. They are also of a greater diameter and not so elongate as is usual with the eggs of birds of this family.

Total length, 3·95 inches; breadth, 2·5 inches.

This specimen was taken from the oviduct of a bird shot at Port Moresby by Mr. Goldie, in 1876.

By way of comparison I give the following measurements of eggs of other species, taken from my note book: —

	LENGTH.	BREADTH.
Megapodius cuvieri	3·95 inches ...	2·5 inches.
Megapodius tumulus, a very elongate specimen	3·63 „ ...	2·2 „
Megapodius, sp. from Island of Kera, one of the Solomon group	3·2 „ ...	1·9 „
Megapodius, sp. (M. brazeri) from Island of Savo, Solomon group, laid by a bird brought on board H.M.S. "Beagle" by a native	3 „ ...	1·95 „
Megapodius Macgillivrayi ? from New Ireland, from the Rev. George Brown's collection ... ... "a"	3·18 „ ...	2 „
"b"	3·04 „ ...	1·84 „
"c"	3·04 „ ...	1·85 „
"d"	2·92 „ ...	1·86 „

Note on Macgillivray's Snake, *Brachysoma triste*.

By E. P. Ramsay, F.L.S.

Brachysoma triste, *Gunther*.

In an interesting Collection of Serpents lately presented to the Museum by Mr. Walter Powell, of Somerset, Cape York, I find a specimen of this rare snake. I have not had an opportunity of comparing the specimen with Dr. Gunther's original description, but I notice that in the description given in Mr. Krefft's "Snakes of Australia" the number of abdominal and subcaudal plates has been omitted, probably from not having a specimen to refer to. I therefore take the present opportunity of supplying this want in the following description :—

All the upper surface blackish brown except the neck and hinder half of the head, which are dull yellowish light brown, all the under surface yellowish light brown; the scales of the back are narrowly and those on the side more definitely margined with light brown; the blackish marking from the side extends on to the adjacent median portion of the abdominal plates; the collar band of the neck and head is of the same tint as the scales below or a little lighter; scales in 17 rows; anal plates 2, abdominal 180, subcaudals 52.

I have only to add that in this specimen the *vertical* plate ends in an *acute* angle, and not in a *right* angle behind.

On *Bruchigavial ongirostris* a New Species of Gull, from King George's Sound.

By George Masters, Curator Macleayan Museum.

A collection of birds lately received from King George's Sound by Mr. Macleay contained two Gulls, of the subgenus *Bruchigavia*, one being fully adult, the other immature, or young.

At first sight they appeared to be identical with our common Silver Gull, *Bruchigavia Jamesonii* (Wilson), but upon comparison I find them to be very distinct from that species.

a:efully gone over the descriptions and measurements
ie New Zealand species, and compared it with various
s from o her parts of the world, I have come to the conclu-
sion that it has not been hitherto described, and therefore propose
for it the name of *Bruchinavia lonairostris*.

The adult has the h ae lders, rump, tail, and all the
under surface white; back a , silvery grey; the shaft of
the first primary white ba black for the next three
inches, then white for ab no inches, and tipped with black;
the second is marked somewh n t e same way, but the white
extends much farther from the ba ; in the third the white
extends to within about an inch of the tip; the web of the first
primary is black for about two-thirds of its distance from the
base, where it is interrupted by a large elongate spot of white,
not quite reaching to the inner margin; of the second white at the
base, and having the large white spot near the tip similar to the
first; the third is without the white spot (that colour extending
from the base to within about an inch from the tip), internally
margined with black, and slightly tipped with white;
secondaries white externally and crossed near the tip with a band
of black, which extends along the inner margin, tips of the two
first white, the others light grey; scapularies silvery grey;
spurious wing white; eyelash black; bill black, with a very
slight tinge of red at the base; legs and feet blackish, intermixed
with a reddish or brown tint.

In the young or immature specimen the shoulders are mottled
with brown and the tail is crossed by a distinct band of blackish
brown near the tip.

Total length 16½ inches, wing 11·8 inches, from eye to tip of
bill 2½ inches, from gape to tip of bill 2·3 inches, bill from fore-
head 2·1 inches, greatest depth of bill 0·46 inch, bill from ante-
rior margin of nostril 0·8 inch, tarsi 2·1 inches, middle toe
without nail 1·5 inches, hind toe without nail 0·3.

The measurements of *B. Jamesonii* are given to show the
great difference that exists between the two species. *B. Gouldii*
from Torres Straits is so much like *B. Jamesonii*, that a compa-
rison with that species is not necessary.

Total length of *B. Jamesonii* 14½ inches, wing 11·4 inches, from eye to tip of bill 1·95 inches, from gape to tip of bill 1·8 inches, bill from forehead 1·7 inches, greatest depth of bill 0·4 inch, bill from anterior margin of nostril 0·65 inch, tarsi 2·8 inches, middle toe without nail 1·4 inches, hind toe without nail 0·25 inch.

B. longirostris can be easily distinguished by its long blackish bill and legs, and by the eyelash being black instead of red.

Araneides of the "Chevert" Expedition,
By H. H. B. Bradley, Esq.

PART II.

II. Ruditelariæ.

A. Celœnides.

Rhyncharachne (Bradley).

R. dromedaria, Bradley, Trans. Linn. Soc. N.S.W., vol. 1, part 3, p. 240, pl. 2, fig. 3.

One female (mature?) from Hall Sound.

Gerrosoma (Bradley).

G. papuense, Bradley, Trans. Linn. Soc. N.S.W., vol. 1, part 3, p. 223, pl. 2, fig. 2.

One female from Hall Sound.

B. Cryptothelides.

Cryptothele (L. Koch).

C. verrucosa (L. Koch).

C. verrucosa, L. Koch, Arach. Aust., p. 240, pl. 20, fig. 2.

One female (immature) from Bet Island. The type specimens are from Rarotonga and Samoa.

III. Retitelariæ.

A. Theridides.

Argyrodes (E. Simon).

A. vittata. n. s.

Cephalothorax Maxillæ. Falces, labium, sternum, and palpi of a light reddish yellow; caput slightly elevated; posterior rows of

eyes not so much curved as in *A. sublimis*; furrows corresponding to the legs, and a short deep transverse furrow behind the caput.

Maxillæ much inclined on the labium, and at the upper part broader than long; the upper part is slightly swollen.

Labium nearly as long as broad, with a slight transverse furrow at the upper part.

Sternum long and pointed at the posterior part.

Abdomen triangular, the apex of which is at the spinnerets, and the sides of which are nearly equal; of a grey colour above, darker on the sides, on which are several black and silvery white lines; under side same colour, with a dark brown square patch extending from the anterior part almost to the spinnerets; between these and the posterior part the colour is black with white spots; legs reddish yellow.

This specimen is from the "Chevert" Expedition, but the locality where it is found is not given. It seems closely allied to *A. sublimis*, but the shape of the maxillæ and the position of the eyes of the posterior row, apart from the different marking, clearly distinguish it from that species. One specimen, female.

THERIDIUM (Walck).

T. mundulum, (L. Koch).

T. mundulum, L. Koch, Arach. Aust., p. 263, pl. 22, fig. 3.

One female found on board ship during the Expedition appears to belong to this species, but is in too bad condition for certain definition; it probably came on board with plants. The specimen described by Dr. Koch is from Port Mackay.

T. dubium, n. sp.

The insect generally of a brownish grey, with dark marking of the same colour.

Cephalothorax ·005 m. long, ·0035 m. broad, broadest at the base, narrowing towards the front.

Eyes placed on two rows curved backwards, the laterals not closer to one another than the intermediates, nearly equal in size and round.

Caput high, not very distinct; the cephalothorax is dark in the centre, giving the appearance of having broad lateral white or bright grey lines, upon which are brown spots corresponding to the legs; these white lines extend from the clypeus; there is also a very fine white line extending longitudinally down the centre of the cephalothorax.

Abdomen globulous, triangular pointed at the posterior part; ·011 m. long, ·005 m. broad, marked for one third of its length from the front by a broad dark longitudinal stripe, which is bordered by narrow white lines.

Legs moderately strong; 4th pair, ·021 m.; 1st, ·02 m.; 2nd, ·019 m.; 3rd, ·016 m. Of the same colour, but banded with darker shade at the lower extremities of the femoral and tibial.

Maxillæ hatchet-shaped, inclined on the labium, rounded on the outer side.

Labium short, broadest at the base, semicircular and truncated at the apex.

Sternum broad, heart-shaped.

One female from Hall Sound.

LABIODECTUS (Walck).

L. Scelio, Thor.

L. Scelio, Thorell, "Araneæ nonnullæ Novæ Hollandiæ, in oefversight of Kongl., vetenskaps, Akademiens Forhandlingar," 1870, N. 4, p. 370.

L. Scelio, Koch., Arach. Aust., p. 279, pl. 23, fig. 4.

One female from Cape York of this very common species, which is found all over the Southern and Eastern part of Australia, certainly from Adelaide to Cape York, and at all elevations up to 3,000 feet. This species and *L. Haseltii* (which I believe is only a variety), are tolerably well known from the venom of their bite, and are indiscriminately referred to as the "black and red" spider. These spiders are found under stones or wood, in angles of walls (near the ground), in flower pots, and amongst grapes, where they make a moderate sized web of loose rafter threads; the egg bag is round, and contains a large number of eggs; the female lays several times in a year. They

live to a very great extent on some of the hardest of the Weevil Beetles, and the venom is probably an acid which enables the spider to divide the hard epidermis. Prefessor Thorell mentions this species as from New Holland. Dr. Koch examined specimens from Rockhampton, Bowen, and Port Denison.

I have often had my attention drawn to cases of poisoning from the bite of this spider, and believe that it is really venomous. A correspondent, whom I have every reason to trust, wrote me some time back that he had been bitten by one of these spiders (a specimen of which he forwarded), and said that the poison caused him three days and nights most intense pain, his arm and hand slightly swollen, and the flesh around the bite a little discoloured; the muscles of the arm and the joints of the fingers were stiff and painful to the touch.

In respect of its venomous character this spider is like its Corsican congener, *L. malmignattus*, which is reputed to be venomous (though M. Walcknaer throws some doubt on this), and also with American species, *L. formidabilis*, *L. perfidus*, *L. variolus*, reported as venomous by Mr. Abbot.

B. Scytodoides.

Micromerys, nov. genus.

Cephalothorax obtusely cordate, truncated in front, arched highest in the centre; caput marked by a furrow.

Eyes, six, about equal, round, arranged in sets of three (touching) on the sides of the caput; in two rows, two in the anterior row and four in the posterior; the posterior row slightly curved back from the anterior row.

Maxillæ long, narrow, surrounding the labium, pointed on the extremity, rounded on the outer side.

Labium distinct, not quite so broad as long, triangular.

Legs excessively long and thin; relative length 1 and 4 equal, 2 3 but ?

Palpi moderately long, very slight.

Sternum cordate.

Falces short, diverging, fangs short and slight.

Clypeus broad and deepest in the middle.

Abdomen much longer than broad, cylindrical, terminating by four spinnerets which are in prolongation of the abdomen.

M. gracilis, n. s.

This whole insect is of an uniform straw colour, with the exception of the points of the fangs, which are red.

Cephalothorax ·001 m. long, and about as broad; in the broadest part marked with furrows corresponding to the legs.

Abdomen ·007 m. long, and about ·001 m. broad, in the broadest part at about one-fifth of its length; almost cylindrical and tapering very slightly towards the spinnerets, which, as stated above, form the termination in prolongation of the abdomen; vulva, placed at the broadest part, is represented by a semicircular opening.

Legs very slight; the only two specimens are very much damaged, and being of unequal size I cannot define these accurately; the larger specimen has the first and third pairs perfect, and their lengths are — first pair, femoral ·007 m., genual about ·0005 m., tibial ·007 m., tarsal ·01 m., metatarsal ·002 m.; third pair, femoral ·004 m., genual about ·0005 m., tibial ·004 m., tarsal ·004 m., metatarsal ·001 m. The femoral of the other legs is the only part remaining, and are—fourth pair, ·007 m.; second pair a little shorter.

Both specimens from Cape York, are females.

C. Enyoides.

Habronestes (L. Koch).

H. ornatus, n. s.

Cephalothorax and *legs* of a light brownish yellow; the cephalothorax ·003 m. long, ·005 m. broad in the broadest part, slightly narrowed in front, highest in the centre, marked with furrows corresponding with the legs, these meeting behind the centre make a very slight dip in the profile.

Eyes nearly equal, round, the middle line very slightly curved forwards.

Maxillæ convex, inclined on the labium, broadest at the base.

Labium triangular, rounded at the side, pointed.

Sternum heart-shaped, pointed at the hinder part.

Falces moderately strong, inclined backwards.

***Legs*, 4, 1,** 2, 3. The cubital is of a lighter shade of the same colour.

Abdomen ·003 m. long, ·0015 m. broad; nearly oval, pointed at the hinder part; above black, with two longitudinal rows of five white pointed spots, each of these rows starting at one-third of the length from the front converge and terminate in one larger round white spot a little above the spinnerets; on each side are two white marks forming a broken line from the spinnerets about two-thirds of the length forward; from the spinnerets again two other broad white lines down the whole length of the underside, and inside of these two other narrow white lines, not running the whole length; the rest of the underside of a dark brown, nearly black.

This species is described from a single immature male from Cocoanut Island, but seems sufficiently distinct.

IV. TUBITELARIÆ.

B. DRASSIDES.

CLUBIONA (Walck).

C. Robusta (L. Koch).

C. Robusta, L. Koch, Arach. Aust., 417, pl. 33, figs. 2 and 3.

Two specimens from Cape York and Darnley Island.

C. ALVEOLATA.

C. Alveolata, L. Koch, Arach. Aust., 421, pl. 33, fig. 6.

Description of two new species of *Helix*, from New Guinea and the Louisiade Islands, by J. BRAZIER, C.M.Z.S., Cor. Mem. Roy. Soc., Tas.

1.—HELIX HIXSONI.

Shell with a covered umbilicus, globosely depressed, rather solid, obliquely striated, more rugose on the lower whorl, white under a thin yellowish epidermis, mottled with irregular light brown opaque spots and spiral lines and bands; whorls four,

convex, the last descending a little in front, roundly convex, having a narrow line contiguous to the suture, another just above, a broader one above it near the suture and breaking off on the second whorl into irregular spots; spire obtuse, apex tipped with brown; base convex, covered with a thin shining yellowish epidermis, encircled near the centre with a narrow brown line running spirally into the interior; aperture oblique, ovately rounded, interior blue black; peristome white, thick, reflected, margins approximating, joined by a thin white callus showing a chestnut brown hue beneath, the right slightly flexuous; columellar margin broadly expanded and reflected, covering the umbilicus.

Diam. mag., 19 lines; min., 15 lines; alt., 12 lines.

Hab. Hall Sound, New Guinea. (Coll. Hobson).

This fine shell I have named at the request of its owner, Mr. James Hobson, after Capt. Hixson, R.N., Portmaster of Sydney. It is said to have been found some seven miles inland at Hall Sound. I don't place much confidence in the localities of species brought to light by traders to the South Sea Islands and other places, for they are generally wrong.

2.—Helix Diomedes, n. sp.

Shell imperforate, trochus shaped, rather thin, obliquely finely striated and granulated throughout, opaque whitish, mottled with light rose pinkish rays and spots; whorls four, slightly convex, the two upper all pink, the last angled and sharply keeled at the periphery, the keel being contiguous to the suture, constricted behind the aperture near the centre, which is oblique and somewhat square; spire conoid, rather sharp; aperture somewhat triangularly ovate, interior shining pinkish white; peristome jet black; margins approximating, joined by a thickened black callosity, the right sinuous, broadly expanded and reflected in the centre, basal margin reflected and furnished within with a somewhat long straight callus, flattened towards the columellar.

Diam. maj., 15 lines; min., 12 lines; alt., 11½ lines.

Hab. Brumer Island, Louisiade Archipelago (Coll. Brazier, Hobson, and Australian Museum).

This species differs from *Helix Brumeriensis* (Forbes) from the same island, by the centre being sharply keeled, the keel being contiguous to the suture; also by the pinkish rays and spots that are scattered over the whole surface.

The specimen in the Australian Museum in its great diam. is $16\frac{1}{2}$ lines; least, $12\frac{1}{2}$ lines; alt., 10 lines.

I take this opportunity of altering the specific name of a species previously described by me in these "Proceedings."

CYCLOPHORUS (DITROPIS) MACLEAYI.

Cyclophorus (Ditropis) Beddomei, Brazier, Proc. Linn. Soc. N.S.W., 1876, p. 113, 129.

There being a *Cyclophurus Beddomei (Ditropis)* described by W. F. Blanford in the Journal As. Soc., Beng., Contrib. to Ind., Malac., 1869, name changed as above.

EXHIBITS.

Dr. J. C. Cox exhibited specimens of a new species of ***Leda*** and dead shells of *Trigonia Strangei*, dredged in Port Jackson.

Also specimens of ***Aspergillum*** (***Humphrisia***) occurring in association with ***Clavigella***, the former of these being found rooted in course sand and on rock.

Mr. Masters exhibited the specimens referred to in his paper on *Bruchigavia*; also a specimen of the gigantic Petrel (***Ossifraga gigantea***), captured at the Sydney Heads,

Mr. Ramsay exhibited specimens of *Poëphila*, showing the variation of colour in adults, the black being replaced with bright yellow instead of crimson; also a specimen of ***Brachysoma triste***.

Mr. Macleay exhibited the two species of ***Tiaris*** described in his paper.

MONDAY, 30TH JULY, 1877.

W. J. STEPHENS, ESQ., M.A., President, in the Chair.

DONATIONS:

Two Papers by PROFESSOR THOROLD, of the University of Upsala, Sweden, on ARACHNIDÆ, from the author.

GEOLOGY of S. Australia, by REV. J. E. TENISON-WOODS, F.G.S., &c., from the author.

Compte Rendu de la Societé Entomologique de Belgique. Serie II, No. 38, from the Society.

PAPERS READ:

On a New Species of NEÆRA.

By REV. J. E. TENISON-WOODS, F.G.S., &c., Corr. Mem. Linn. Soc., N. S. W.

The following species of the rather uncommon genus *Neæra* was dredged up a few days ago, by Dr. James Cox, in Port Jackson, at a depth of 16 fathoms. Only three or four specimens were obtained, in company with a number of broken and dead valves of *Trigonia Strangei*. It is worthy of remark that the number of *Neæra* properly so called is far less numerous than is commonly imagined. Many shells formerly belonging to this genus have been distributed among other tribes. See *A. Adams on the Neæra of Japan, Ann. Nat. Hist.*, 1864, *p.* 206. Two species were formerly attributed to Australia, *N. fragilis*, A. Adams, and *N. rugata*, the former from Moreton Bay, the latter Port Jackson. *N. fragilis* is now removed to the genus *Theora*. *N. rugata* is a very small species. The following is the diagnosis.

NEÆRA LATESULCATA, *n. s., N. t., fragili, ovali, ventricosa, antice latiore, rotundata, obtuse angulata, postice valde rostrata, albida, opaca, concentrice sulcata et plicata, plicis*, 12—16, *latis, planatis, superne angulatis et subacutis, ætate latioribus, supra rostrum prolongatis, sinu postico deflexis, deinde tenuiter curvatis, sæpe autem*

confluentibus; rostro compresso, rotundato, vix recurvo, a margine postico sinu lato, angulato, sejuncto, superne ab umbonibus irregulariter crebre transversim corrugato; lunula longa, angusta, lanceolata, parum impressa; umbonibus parvis, incurvatis; pagina interna lactea, nitente corrugata; impres. musc. magnis sat conspicuis; fossa ligamenti, cochleariformi, prominenti. Long, 13, *Lat.* 22, *alt.* 9, *long. rost.* 7, *lat. (circiter)* 4, *mill.*

Shell fragile, oval, ventricose, anteriorly wider, rounded, obtusely angular; posterior with a long rostrum; milky white, opaque, concentrically sulcate and plicate, plaits 12 to 16, broad, flattened, angular above and subacute, becoming wider with age, prolonged upon the rostrum, deflected by a posterior sinus, then slightly curved, and often confluent; rostrum compressed, rounded, slightly re-curved, separated by a wide angular sinus, the upper part closely transversely corrugate from the umbones to the end; lunule long, narrow, lanceolate, slightly impressed; umbones small, incurved; interior dull milky white, shining, corrugate; muscular impressions large, rather conspicuous, ligamental fossa spoon-shaped and prominent.

This singular species is mainly remarkable for its broad corrugations, which show inside the valves, and for the singular sinus at the rostrum, where the plaits become straightened out, and either parallel or confluent, following the marginal side of the prolongation on whose upper side, fine striæ (which continue to the umbone) are given off at right angles to the axis. These striæ seem to agglutinate to themselves fine particles of sand, &c. The shell is somewhat like the British *N. cuspidata*, Olivi, but differs in the corrugations, the peculiar marks on the rostrum and the sinus, which in the species referred to is double. *Theora fragilis* has no proper rostrum, and is pellucid. *N. rugata* is finely striate on both rostrum and shell. There are some mesozoic fossil forms somewhat like the new species. *Necæra* is a genus which has been existing from the Oolitic period, since when it has been gradually increasing in number.

On a variety of Trigonia Lamarckii.

By Rev. J. E. Tenison-Woods, F.G.S.

I beg to call attention to an interesting variety of *Trigonia Lamarckii*, which I designate thus :—

Var. *A, Reticulata. Testa tenui, parva, costis acutis, nodulis subspinosis, tota testa peculiariter reticulata.*

This shell was dredged outside Port Jackson Heads by Mr. John Brazier, at a depth of 45 fathoms. The shell is small and thin, and the ribs are sharp, while the nodules are almost spinous. The whole surface is very finely reticulated or perhaps it would be more correct to say shagreened.

The fact of this variety having sharp ribs is of importance, as a fossil form is found in our Australian Cainozoic rocks, whose main point of distinction from the living *T. Lamarckii* is the possession of acute ribs and spinous nodules. This is McCoy's *T. acuticostata*. The present variety cannot be said to be a young shell, because young shells do not present any such peculiarities as may be seen from the specimens exhibited.

We have six described species of *Trigonia* in Australia, viz.— *T. Strangeii, T. Lamarckii, T. margaritacea, T. pectinata, T. uniophora*, and *T. Jukesii*. Probably there are only four distinct species, as *T. Lamarckii* and *T. pectinata* are the same, and *T. Jukesii*, Adams is a synonym for *T. uniophora* of Gray. See Voy. of H. M. S. "Fly."

There are two or three fossil species in our Australian Tertiary deposits, viz.—*T. semiundulata*, McCoy, *T. acuticostata*, McCoy, and *T. Howitti*, McCoy.

On a Tertiary Formation at New Guinea.

By the Rev J. E. Tenison-Woods, F.G.S., and Corr. Mem. Linn. Soc.

During the voyage of the Chevert a tertiary formation was found at Yule Island, New Guinea, and the fossils brought home on the occasion have been submitted to my examination by Mr.

W. Macleay. The rock is an extremely friable fine grained yellow limestone, very much like the limestone beds on the River Murray, in South Australia, but less consistent, as it powders by handling. Unlike the Murray limestones, or any of the Tertiary formations of Southern Australia, there seems to be a total absence of *Polyzoa*, neither could I detect any *Foraminifera* on subjecting different portions to microscopic examination. It seems to me to be rock which is derived from the detritus of a coral reef, and formed into a finely levigated limestone paste, stained yellow probably from the proximity of some ferruginous rocks. But there are no traces of coral, which is the more to be regretted, as from no organisms would the position of these beds be so easily determined, and their relation to other Australian Tertiary rocks, as from coral. Situated as the deposit is so near the tropics, the absence of any signs of corals is a matter of wonder. The shells are not numerous, and for the most parts mere casts. *Pectens* are however well preserved, and this is the case with the same genus in similar tertiary rocks at Mount Gambier. I propose to treat of the Mollusca in another paper. At present I intend to deal with the *Echini*, which are also well preserved. There were three detached specimens among the loose dust; two of one species and one of another, which I will now describe.

The first was *Peronella decagonalis*, Lesson. This species is a living form which is very wide in its distribution, being found in China, in the Indian Ocean, the Philippines, and in Australia. The Australian specimens are generally tropical, but it is not uncommon at Port Jackson and New Caledonia. The specimens, two in number, are extremely thin and concave on the actinal side, but they are both young specimens, and one scarcely above an inch in diameter.

TEMNECHINUS MACLEAYANA, sp. nov. I name this fossil provisionally, because it comes nearer to the genus described by Professor Duncan *(T. lineatus)* from Mordialloc, Victoria, than any other form known to me. But the abactinal area is encrusted, and cannot be made out. The test is small, depressed, *circular*,

and the ambitus rounded. The actinal surface is slightly rounded and *depressed* to the actinostome. The interambulacral areas are twice the width of the ambulacra at the ambitus, and about one-third broader at the mouth. They are *slightly depressed in the middle* by an undulating line of suture which becomes a very distinct depression on the abactinal surface, on which the lines of the plates are well marked. The pores are in a vertical row, slightly oblique, and their zones sunken. The interambulacra have two rows of primary tubercles, each row being flanked again on each side by a vertical row of secondaries, all small imperforate, both primaries and secondaries surrounded by circles of granular tubercles, which are frequently connected with the main tubercle by a ridge. Ridges which are granular also separate the pores. The primaries of the ambulacra are in two vertical rows, each close to its poriferous zone. Their secondaries are not so visible, but the rings of granules are very manifest, with an indented vertical line of suture in the centre. Actinal opening large, with conspicuous but not deep indentations. Diam. 16, alt. 6 millimetres. The specimen had been slightly crushed by pressure so that the coronal plates were often disarticulated.

This genus is very well represented in the tertiary rocks of Great Britain, but principally I believe as a Pliocene form. D'Archiac and Haime have figured from the Nummulitic formation of India, a number of species which Agassiz (*Revision of the Echini*) regards as belonging to this genus, *Temnechinus*. One is found living in the American seas at a depth varying from 30 to 100 fathoms. The nearest affinities are *T. globosus*, of the British Crag.

From the evidence afforded by these fossils, and from a cursory examination of the mollusca, I should not be inclined to regard those beds as so old as those of the Murray River, Mount Gambier, or Cape Otway. If we consider the Mount Gambier beds as middle miocene, though there are strong reasons for placing them even lower in the series, we may look upon the Yule Island formation, from which these fossils were taken, as Lower Pliocene. It is a most interesting fact to find evidence of recent

upheaval in New Guinea, especially as there has never been any similar evidence found on the east side of the Australian continent. It remains to be seen whether, in this case as in the Southern Australian tertiaries, we have the sign of volcanic activity accompanying the upheaval. Mr. Macleay showed me specimens of true amygdaloidal and vesicular dolerites, taken from the coast of Darnley Island, opposite Yule Island, a distance however of 150 miles. They were in all respects similar to the Victorian pliocene dolerites. The bathymetrical evidence of these fossils show that at least there has been upheaval to the extent of 400 or 500 feet.

Continuation of the Mollusca collected during the Chevert Expedition.

By J. Brazier, C.M.Z.S., Corr. Mem Roy. Soc., Tas.

Sub-class PULMONATA.

Order INOPERCULATA.

Family AURICULIDÆ.

1.—Pythia imperforata.

Scarabus imperforatus, A. Adams, Proc. Zool. Soc., London, 1850, p. 151.

Pythia imperforata, Pfr. Mon. Auriculaceorum, 1856, p. 81.
„ „ Paetel Catalog. 1873, p. 114.
„ „ Pfr. Mon. Pneum. Viven. 1876, p. 339.

Hab. Katow and Ethel River, New Guinea.

2.—Pythia insularis.

Scarabus insularis, Hombr. et Jacq. Voy. au Pole Sud., 5, p. 40 Atlas Moll., pl. 10, fig. 15, 16, 17.

Pythia insularis, Pfr. Mon. Auriculaceorum, 1856, p. 85.
„ „ Pfr. Mon. Pneum. Viven. 1876, p. 341.

Hab. Katow River; Hall Sound, New Guinea.

3.— Cassidula angulifera.

Auricula Angulifera, Petit. Revue. Zool., 1841, p. 101.

„ „ (Cassidula) Menke, Moll. Nov. Holland, p. 8.

„ *subrepta*, Hombr. et Jacq. Voy au Pole, Sud. 5, p. 36, Atlas Moll., pl. 9, fig. 13, 14, 15.

„ *angulata*, Forbes, Appendix to Voyage Rattlesnake, p. 362.

Cassidula angulifera, H. and A. Adams, Proc. Zool. Soc., London, 1854, p. 31; *Rhodostoma bidentata*, Swainson, Proc. Royal Soc., Tasmania, 1854, Vol. 3, p. 45, pl. 7, fig. 5.

Cassidula angulifera, Pfr. Mon. Auriculaceorum, 1856, p. 119.

„ „ Chenu Manuel de Conch., part 1, p. 475, fig. 3512. *Melampus anguliferus*, Chenu Lec. élém., p. 244, f. 913.

Cassidula angulifera, Paetel Catalog. 1873, p. 114.

„ „ Pfr. Mon. Pneum. Viven. 1876, p. 354.

Hab. Katow, New Guinea, two specimens were found dead on the beach; Cape Sidmouth and Fitzroy Island, North-east Australia (Brazier); Cardwell, Rockingham Bay, (Mr. Beddome.)

4.—Cassidula auris-felis.

Bulimus auris-felis, Brug. Encycl. méth. 1, p. 343, p. 77.

Voluta coffea, Chem. (not Linn.) 9, pt. 2, 45, f. 1043, 1044.

Ellobium inflammatum, Bolt, Mus., p. 106, n. 1352.

Auricula coffea, Wood Ind. Test., p. 97, pl. 19, fig. 15.

„ *auris-felis*, Blainville, Dict. Soc. nat. 3 Suppl., p. 132.

„ *felis* (Cassidula), Fer. Prodr., p. 105, n. 25.

„ „ Lam. Anim. Sans. Vert., tome 6, part 2, p. 138. Desh. Ed., Vol. 8, p. 326. Reeve, Conch. Syst., Vol. 2, pl. 187, f. 6.

Auricula fusca, Hombr. et Jacq. Voy. au Pol. Sud., Vol. 5, p. 34, Atlas Moll., pl. 9, f. 7, 8, 9.

Cassidulus felis, Beck, Ind., p. 105. no 2.

Chemnitzi, Beck, Ind., p. 105, no. 1.

Cassidula felis, Anton. Verz., p. 48. Gray, Proc. Zool. Soc., 1847, p. 179.

Cassidula coffea, H. and A. Adams, Proc. Zool. Soc., 1854, p. 31.
„ *auris-felis*, Morelet, Sér., Conch. de Moll., p. 272.
Rhodostoma coffea, Swainson, Malacology, p. 344.
Cassidula auris-felis, Pfr. Mon. Auriculaceorum, 1856, p. 117, Mon. Pneum. Viven, 1876, p. 354; Paetel Catalog. 1873, p. 114.
Hab. Mud Bay, Cape York, North Australia, found up a small creek, on the roots of *Rhizophora;* Singapore, Phillippine Islands, Cochin China, Borneo.

5.—CASSIDULA RUGULATA.

Auricula rugulata, Hombr. et. Jacq. Voy. au Pole Sud. Atlas, pl. 9, fig. 10, 11, 12.
Auricula regulata, Rouss. Voy. au Pole, Sud., Vol. 5, p. 35.
Hab. Ethel River, Hall Sound, New Guinea.

6.—CASSIDULA SOWERBYANA.

Auricula Sowerbyana (Cassidula), Pfr. Zeitschr., f. Malak, 1853, p. 125.
Cassidula Sowerbyana, H. and A. Adams, Proc. Zool. Soc. 1854, p. 32.
„ *decussata*, H. and A. Adams, Proc. Zool. Soc. 1854, p. 32.
„ *Sowerbyana*, Pfr. Mon. Auriculaceorum, 1856, p. 111. Mon. Pneum. Viven, 1876, p. 352, Paetel Catalog, 1873, p. 114.
Hab. Hall Sound, New Guinea, found on *Rhizophora*; Singapore and Moreton Bay (Mus. Cuming.)

7.—AURICULA AURIS-JUDÆ.

Bulla auris Judae, Linn. Syst., ed. 10, p. 728.
Voluta Auris Judae, Linn. Syst, ed 12, p. 1187.
Helix Auris Judae, Mull. Hist., Verm. 2, p. 109.
Bulimus Auris Judae, Brug. Encycl., Meth 1, p. 344.
Ellobium labrosum, Bolt., Mus., p. 105, n. 1350.
„ *subtile*, Bolt., Mus., p. 105, n. 1351.
„ *auris Judae*, H. and A. Adams, Proc. Zool. Soc., 1854, p. 7.

Auricula Judae, Lam. Anim. Sans. Vert., tome 6, part 2, p. 137. Ed. Deshayes, tome 8, p. 324.

Auricula auris Judae, Pfr. Mon. Auriculaceorum, 1856, p 134.

„ „ „ Paetel Catalog. 1873, p. 115.

Auriculus auris Judae, Pfr. Mon. Pneum. Viven. 1876, p. 357.

Hab. Creeks about Cape York, North Australia; Cape Sidmouth, North-East Australia (Brazier.)

8.—Auricula dactylus.

Auricula dactylus, Pfr., Proc Zool. Soc., London, 1854, p. 151.

„ „ Pfr. Mon. Auriculaceorum, 1856, p. 129.

„ „ Pfr. Novit, Conch. 1, p. 15, n. 24, pl. 5, f. 15, 16.

Auriculus dactylus, Pfr. Mon. Pneum Viven, 1876, p. 357.

Hab. Ethel River, Hall Sound, New Guinea; Borneo (Pfeiffer.)

9.—Auricula semisculpta.

Ellobium semisculptum, H. and A. Adams, Proc. Zool. Soc., 1854, p. 9.

Auricula semisculpta, Pfr. Mon. Auriculaceorum, 1856, p. 136.

„ „ Pfr. Novit, Conch. 1, p. 39, pl. 10, fig. 7-9.

„ „ Gassies, Faune, Conch., Nouv. Caléd., 1863, p. 70, pl. 3, fig. 11.

Auriculus semisculptus, Pfr. Mon. Pneum. Viven, 1876, p. 359.

Hab. Mud Bay, Cape York, North Australia; Warrior Island, Torres Straits, found under samphire; Gambier Islands (Cuming); Isle of Pines, New Caledonia (Montrouzier); Prony Bay, New Caledonia (Brazier.)

10.—Auricula Dunkeri.

Auricula Dunkeri, Pfr. Zeitschr., f. Malak., 1853, p. 125.

„ „ Pfr. Mon. Auriculaceorum, 1856, p. 138.

„ „ Pfr. Mon. Pneum. Viven. 1876, p. 360.

Hab. Katow, New Guinea.

11.—Plecotrema lirata.

Plecotrema lirata, H. and A Adams, Proc. Zool. Soc., 1853, p. 121.

Plecotrema lirata Pfr. Mon. Auriculaceorum, 1856, p. 101.
„ „ Pfr. Mon. Pneum. Viven, 1876, p. 343.

Hab. Long Island, Torres Straits, found under coral blocks, in company with *Quoyia decollata*.

12.—PLECOTREMA MONILIFERA.

Plecotrema monilifera, H. and A. Adams, Proc. Zool. Soc., 1853, p. 120.
„ „ Pfr. Mon. Auriculaceorum, 1856, p. 101.
„ „ Pfr. Mon. Pneum. Viven. 1876, p. 347.

Hab. Darnley Island, Torres Straits.

The locality of this fine species does not appear to have been known to the Brothers H. and A. Adams, or Dr. Pfeiffer. The beaded transverse ribs are conspicuous. One single example found.

13.—LAIMODONTA BRONNI.

Auricula Bronnii, Philippi Zeitschr. f. Malak, 1846, p. 98.
Melampus Bronni, Pfr. Mon. Auriculaceorum, 1856, p. 49.
Ophicardelus (*Laimodonta*) *Sandwichiensis*, H. and A. Adams, Proc. Zool. Soc., 1854, p. 34.
Melampus Sandwichiensis, Pfr. Mon. Auriculaceorum, 1856, p. 50.
„ *sandwicensis*, Paetel Catalog. 1873, p. 114.
„ *Sandwichiensis*, Pfr. Mon. Pneum. Viven. 1876, p. 319.
„ *Bronni*, Pfr. „ „ „ „ „
Auricula Sandwichiensis, Soulet.

Hab. Home Islands, North-East Australia; Sue and Darnley Islands, Torres Straits; Sandwich Islands (Pease.)

The Australian specimens are smaller than the typical species from the Sandwich Islands.

SUB-FAMILY MELAMPEA.

14.—MELAMPUS ADAMSIANUS.

Melampus Adamsianus, Pfr. Proc. Zool. Soc., London, 1854, p. 121.
„ „ Pfr. Mon. Auriculaceorum, 1856, p. 49.

Melampus Adamsianus, Pfr. Novit, Conch 1, p. 18, pl. 5, fig. 17, 19.

„ „ Gassies, Faune, Conch., Nouv. Caled., 1863, p. 570, pl. 7., fig. 2.

Melampus Adamsianus, Pfr. Mon. Pneum Viven, 1876, p. 304.

Hab. Mud Bay, Cape York, North Australia; Art Island, New Caledonia (R. P. Montrouzier); Prony Bay, New Caledonia (Brazier); New Zealand ? (Cuming.)

I doubt if this species was ever found in New Zealand. Very few of the Shells described from the Cumingian Collection ever had the correct locality given to them.

15.—MELAMPUS PULCHELLUS.

Auricula pulchella, Petit. Proc. Zool. Soc., 1842, p. 202.

Melampus pulchellus (Tralia), H. and A. Adams, Proc. Zool. Soc., 1842, p. 11; *Melampus Pulchellus*, Pfr. Mon. Auriculaceorum, 1856, p. 35; Mon. Pneum. Viven. 1876, p. 308.

Hab. Warrior Island, Torres Straits; Fitzroy Island, North-East Australia (Brazier); Phillippines, Singapore.

16.—MELAMPUS CRISTATUS.

Melampus cristatus, Pfr. Proc. Zool. Soc., 1854, p. 122.

„ „ Pfr. Mon. Auriculaceorum, 1856, p. 43.

„ „ Pfr. Novit., Conch. 1, p. 17, pl. 5, fig. 3, 4, 5.

„ „ Gassies, Faune, Conch. Nouv. Caled., 1863, p. 59, pl. 7, fig. 8; Pfr. Mon. Pneum. Viven. 1876, p. 313.

Hab. Home Islands, North-East Australia; Bay Boisée, New Caledonia (R. P. Montrouzier); Prony Bay, New Caledonia (Brazier); Phillippine Islands (Cuming.)

17.—MELAMPUS VARIABILIS.

Melampus variabilis, Gassies, Faune Conch. Nouv. Caled., 1863, p. 65, pl. 6, fig. 8.

Melampus variabilis, Pfr. Mon. Pneum. Viven. 1876, p. 315.

Hab. Barrow Island, Cape Grenville, North-East Australia; Mud Bay, Cape York, North Australia; New Caledonia (Raynal.) Anse Vata, Near Nouméa, New Caledonia (Brazier); very common.

18.—Melampus, sp?

Hab. Warrior Island, Torres Straits. Two specimens were found, dead and worn.

19.—Melampus Stutchburyi.

Melampus (*Ophicardelus*) *Stutchburyi*, Pfr. Proc. Zool. Soc., 1856, p. 393; Mon. Pneum. Viven. 1876, p. 321.

Melampus Stuchburyi, Paetel Catalog. 1873, p. 114.

Hab. Cape Grenville, North-East Australia; Port Curtis (Stutchbury.)

The shell figured by Gassies in his Faune Conchyliologique Nouvelle-Caledonie, 1863, does not represent *Melampus Stutchburyi*, Pfr. M. Gassies gives Pfeiffers description of that species, and figures some shell like *Melampus Australis*. The only shell anything like *M. Stutchburyi*, Pfr., is *Melampus Montrouzieri*, Souverbie, which I have collected at Prony Bay, in the South of New Caledonia.

20.—Melampus sulcatus.

Ophicardelus (*Laimodonta*) *sulcata*, H. and A. Adams, Proc. Zool. Soc., 1854, p. 34; *Melampus sulcatus*, Pfr. Mon. Auriculaceorum, 1856, p. 54; Paetel Catalog. 1873, p. 114; Pfr. Mon. Pneum. Viven. 1876, p. 323.

Ophicardelus (*sulcatus*), Angas. Proc. Zool. Soc., 1867, p. 231.

Hab. Cape York, North Australia, four specimens found; Port Jackson, New South Wales.

Family SIPHONARIIDÆ.

21.—Siphonaria atra.

Siphonaria atra, Quoy and Gaimard, Voy. de l'Astrolabe, Vol. 2, p. 337, pl. 25, fig. 41, 42; Reeve, Conch., Icon., pl. 3, sp. 14; Paetel Catalog. 1873, p. 117.

Hab. Palm Island, North-East Australia; Darnley Island, Torres Straits; Port Jackson, New South Wales; Tutula, Samoan Group (Brazier.)

22.—SIPHONARIA SIPHO.

Siphonaria sipho, Sowerby, Genera of Shells, fig. 1, Siphonaria.
„ „ Lam. Anim. Sans, Vert (Desh. ed.), tome 7, p. 557.

Hab. Darnley and Dungeness Islands, Torres Straits.

23.—SIPHONARIA SIQUIJORENSIS.

Liphonaria Siquijorensis, Reeve, Conch. Icon., 1856, pl. 6, sp. 27.

Hab. Bet Island, Torres Straits.

The *Batrachians* of the "Chevert" Expedition,

By WILLIAM MACLEAY, F.L.S.

The Batrachians collected during the cruise of the "Chevert," are few in point of number, and belong exclusively to the section of the *Batrachia Anura*, to which Dr. Gunther gives the name OPISTHOGLOSSA. But though few, they are not without interest, as exhibiting the complete dissimilarity between the Batrachian Fauna of New Guinea and Australia.

OPISTHOGLOSSA OXYDACTYLA.

RANASTER, New Genus.

Habit rather stout. Head large and rounded. Legs rather short. Fingers and toes tapering, and slightly webbed, with tubercular pads on the carpal and tarsal bones. Skin smooth. Maxillary teeth conspicuous, acute, bicuspid, and sub-distant. Vomerine teeth conspicuous and sub-distant, situated on a long, straight, transverse ridge, sharply divided in the middle. Inner nostrils rather large, and in front of the vomerine ridge. Tongue largely notched behind. Tympanum distinct. Sacral vertebra dilated. No paratoids.

This genus will, I fancy, fall into Gunther's Family *Discoglossidæ*. The most remarkable feature about it is the dentition; the teeth, both maxillary and vomerine, being comparatively large and distant.

1.—Ranaster convexiusculus.

Head and back convex; snout broad and rounded. Fingers with 3 or 4 tubercular pads beneath. Toes longer, slighter, and with the same number of pads beneath. Colour, above brown mottled and spotted with black with a broad grey stripe from between the eyes to the snout and one or two others from the eye to the lip, beneath, on the abdomen yellowish, on the throat and breast yellow, spotted with reddish brown, and on the legs reddish.

Length of body, 16 lines; of the thigh, 6 lines; and of the foot, 8 lines.

One specimen was procured at Katow.

OPISTHOGLOSSA PLATYDACTYLA.

Hylophorbus, New Genus.

Form elongate. Head small. Eyes prominent. Nostrils on the side of the snout, which is prominent. Mouth opening beneath. Teeth none. Internal nostrils almost hidden under the projecting snout. Tongue not free behind. Fingers and toes free and slight, with a small but distinct short transverse disc at their extremities. Tympanum visible, but covered with skin. Skin smooth. No paratoids. Sacral vertebra ?

I imagine this to be a perfectly new form, at all events it does not seem to conform well to any of Dr. Gunther's sub-divisions of the *Opisthoglossa platydactyla*.

2.—Hylophorbus rufescens.

Colour, above, reddish brown, indistinctly mottled with darker brown, the lighter patches and the head appearing under a powerful lens to be dusted with yellowish scales or granules, on each side a broad somewhat interrupted curved brownish red line, occasionally varied with yellow, extends from a little behind the ear to the extremity of the anterior part of the thigh; the same line shows slightly on the upper part of the tympanum, and more distinctly in the front and on top of the snout, and in front of and underneath the eyes. The upper part of the arm is also

reddish brown, spotted with yellow. The under surface is a yellowish red, much mottled on the throat, chest, and inside of the thighs, with reddish brown. The colours probably before immersion in spirits were much more lively.

Length of body, 16 lines; width 5; arms 9, and legs 24 lines.

One specimen from Katow.

3.—Hylarana nebulosa.

Snout, roundly pointed; nostrils nearer the snout than the eyes. Vomerine teeth in two oblique series, converging behind, tongue very deeply bilobed behind. Fingers and toes with small discs and large tubercles beneath. Upper surface of a bluish lead colour, on each side a broad blackish band extends from the snout almost to the thigh, with a yellow line above and below it, the upper line is most conspicuous between the eye and the snout, along the rest of its course it seems to be marked by a longitudinal skinny fold—the lower line commences at the lower lip, is a little wider than the other, very interrupted, and cannot be traced beyond the shoulder. The lower eyelid is white. The under surface is yellow, very much clouded on the throat, chest, and upper part of the abdomen, with bluish grey.

Length of body, 16; width 4; length of legs 24 lines.

One specimen was captured at Cape York. Another species of this genus, *Hylarana erythraea*, described by Schlegel, from Java, is said by Dr. Gunther to have been found also at Cape York.

4.—Litoria guttata.

Head broad and flat between the eyes. Nostrils on the side of the snout. Vomerine teeth in two very small clumps. Fingers broad and partially webbed. Upper surface green, with some small round yellow spots on the back; under surface reddish, beneath the legs of a brighter red.

Length of body 13, of legs, 24 lines.

One specimen from Katow.

5.—Litoria dorsalis.

Elongate. Snout pointed. Mouth opening beneath. Nostrils in a lateral depression, close to the snout. Fingers and toes with a well defined roundish disk, the toes webbed only at the base. Tongue not notched behind. Vomerine teeth in two very oblique short series, with the internal nostril on each side large and oval. Skin of back smooth, of belly granular. Colour, above, dark, with a broad central whitish band from the snout to the anus, beneath yellowish, much clouded with brown on the throat and chest.

Length of body, 9; width, $2\frac{1}{2}$; length of legs, 16 lines.

One specimen from Katow, probably immature.

6.—Pelodryas cæruleus.

Rana cærulea, White, Jour. N. S. Wales, app. 248; Shaw, Zool. III, p. 113; Daud. Rain., p 70; Merr. Tent., p. 174.

„ *Australasiæ*, Schneid, Hist. Amph., p. 150.

Hyla cyanea, Daud. Rept. viii, p. 43; Cuv. Regne. Anim.; Schleg. Abhild., t. 9, fig. 2; Dum. and Bibr., p. 577.

Calamites cæruleus, Wagl. Amph., p. 200.

Calamita cyanea, Tschudi Batr., p. 73.

Pelodryas cæruleus, Gunther, Cat. Batrach. Salient. Brit. Mus., p. 119, pl. ix, fig. B.

Several specimens of this widely distributed Australian tree frog were taken at Darnley Island, but that seems to be its northern limit.

7.—Pelodryas militarius.

Ramsay, Proc. Linn. Soc., N. S. Wales, vol. 2, p. 28.

Mr. Ramsay described this species from a specimen obtained at New Ireland. I found it at both Hall Sound and Katow, some of the specimens from the last named place being $4\frac{1}{2}$ inches long in the body, and 9 inches in the legs. The elongate form, the great length of the legs, and the small size, if not entire absence of the paratoids, separate this very widely from the typical species of *Pelodryas*.

Notes on some Birds from Savage Island, Tutuila, &c., in the collection of the Rev. Mr. Whitmee, F.R.G.S., &c., &c.

By E. P. Ramsay, F.L.S., Curator of the Australian Museum.

Through the kindness of the Rev. S. J. Whitmee, I have been enabled to examine a small collection of birds, which that gentleman has brought with him from the South Sea Islands. This collection contains some very interesting species from Savage Island, and is valuable in determining the range of habitat of some of the South Sea Island birds. I find among those obtained at the Island of "Tokalow" of the Union Group, a very beautiful species of Tern, rarely found in Australian collections, perhaps from its seldom visiting the coast, and belonging more to the sea-loving section of the group (*Anous*) than to those (*Sterna*) which usually frequent the shores.

This species is seldom seen near land except during the breeding season when it congregates in great numbers; I find it to be identical with Procelsterna (*Lafr*) albivittata, (*Bp.*) the *Anous cinereus* of Gould, but it differs from Mr. Gould's description* a little in the size, as will be seen from the following measurements.

Anous cinereus, *Gould.*

Mr. Whitmee's specimens from Tokalow.

Total length from base of bill to oil gland 6·1 inches; from tip of bill to extreme tip of outer tail feathers, 10·5 inches; bill from forehead 1·1 inches, from angle of mouth 1·4 inches. Wing from flexure 7·25 inches; tarsus 0·9 inch; tail from oil gland to centre feathers 3·2 inches; from ditto to outer feathers 4·5 inches; middle toe and nail, 1·2 inches.

Measurements from Mr. Gould's Handbook ii. *p.* 421.

Total length, 11 inches; bill, 1½ inches; wing, 8 inches; tail, 5 inches; tarsi, 1⅛ inches; middle toe and nail, 1⅜ inches.

I may also note from near Samoa a specimen of Puffinus (*Nectris*), carneipes? This species differs from its near ally Puffinus brevicaudis (*Brandt*) in having a longer tail, wings,

* Gould, Bds. Austr., fol. Vol. VII, pl. 37, id. Handbook, Vol. II, p. 421.

and tarsus, and in having the legs and feet flesh colored. Mr. Gould mentions it from the Southern and Western coasts, and states that it resorts, among other places, to the small islands off Cape Leuwin for the purpose of breeding. Total length of skin, 14·8 inches; bill from forehead, 1·7 inches; from nostril to tips, 0·9 inches; from gape, 1·9 inches; wing, 1·1 inches; tarsus, 2 inches; tail, 3·8 inches; middle toe and nail, 2·4 inches.

The bill in this specimen has the nostrils and culmen blackish.

Among the Pigeons I find Didunculus strigirostris, on which some very interesting notes by Mr. Whitmee will be found in the P.Z.S., 1874, p. 183.

? Carpophaga microcera, *Bp.* Janthœnas vitiensis, *Quoy et Gaim.* Phlegœnas stairii, Ptilonopus mariæ. *Homb. et Jacq.* Ptilonopus fasciatus, *Peale.* From the Samoan Islands.

And a Ptilonopus sp. from Savage Island.

This is apparently one of the varieties of *P. porphyraceus.* (*Forst.*) The crown of the head has more of a rose pink tint than of a violet purple and is margined behind with a line of yellow; occiput and hind neck tinged with green, remainder of the neck above and the mantle, ashy-grey tinged with green; throat and chin white, under surface and sides of the neck and face, the chest breast, and the under surface of the wings and tail ashy grey; across the lower part of the breast a short dark obscure band, of a violet tint in certain lights; the abdomen, from this band downwards, the flanks and feathered portions of the legs green, the feathers on central portions of the abdomen and lower part of thighs margined with yellow; under tail-coverts clear bright yellow without any orange or other tint.

Tail, dark ashy grey below, green above; across the tips of the feathers, on the under surface is a band of ashy white; on the outer feathers this band is shaded with green on the margins, and finally narrowly edged with yellow. Wings above, bright green, like the tail, the quills brownish black on the inner webs, the secondaries and wing coverts narrowly edged with yellow; the back

scapulars green, mesially shaded with bluish green, forming speculæ; rump, and upper tail coverts of a duller tinge of green.

Total length, 8½ inches; bill, 0·6 inch; wing, 5·3 inches; tail, 3 inches; tarsus, 0·9 inch; bare portion, about 0·2 inch. Bill and feet greenish grey.

This variety—as both the birds I have examined show the same characteristics—may eventually prove to belong to a distinct species, and if such be the case, I propose for it the name of *P. whitmeei*, in honor of its discoverer.

COLLOCALIA SPODIOPYGIA, from Samoan Islands.

These specimens do not differ from the Fiji individuals, except perhaps in being a trifle smaller, they nest in caves, glueing together fibrous roots, grass, or the leaves of the *Casuarinæ*, and fastening their nests to the roofs, sides, or ledges of the rocks. The eggs are white, and about the size and shape of the red eye-browed finch, *Estrilda temporalis*.

Among the Meliphagidæ there is nothing of note, except perhaps some fine males of *Myzomela nigriventris*, and two of the large *Leptornis samoaensis*. There is a Campephaga agreeing well with the *Lanius Karu* of Lesson, not having *any rufous* tinge on any part. Also an *Aplonis* both from Savage Island.

A fine Kingfisher (? *Halcyon sacra*), from *Tutuilla*, which makes me doubt that the birds from Fiji belong to this same species. The bird is apparently quite adult, the head, the whole of the neck, throat, and all the under surface white, ear-coverts and a narrow collar round the back of the neck blue separated from the back by a broad band of white; feathers on the crown of the head tipped with blue and margined or tipped here and there with light rufous or yellowish, several of the feathers on the broad white band over the eye, and a few on the back of the neck, also tinged irregularly with yellowish; the upper surface of the wings and tail dark blue, the scapulars and back blue tinged with green; under wing and tail-coverts white, inner webs

of wing and tail quills blackish, first feather of the primaries all black, except at the base, which, as in the remainder of the quills, is whitish on the inner web. Bill, from forehead, 1·8 inches; from nostril, 1·4 inches; from gape, 1·9 inches; width of gape, 0·17 inch. Total length, 9 inches; Wing, 3·75 inches; tail, 2·7 inches; tarsus, 0·55 inch. Measurements taken from a spirit specimen in the flesh.

Bill black, base of lower mandibles to near the tip, extending along the lower ridge, white.

Ortygometra quadristrigata and *Porzana tabuensis*, from the Samoan Islands. There are also specimens of *Ardea sacra* and *Phaëton æthereus*, of which latter I give the following measurements:—

Bill yellow, 1·9 inches; from angle of the mouth, 2·3 inches; wing, 10·3 inches; tarsus, 0·75 inch; tail, 4·5 inches; centre feathers, 20·2 inches.

EXHIBITS.

Mr. Brazier exhibited specimens of *Haliotis Canilioulata*, a species not previously found in Port Jackson; also of *Tellina perna*, from the same locality, and a collection of small shells, showing a convenient way of displaying them.

Mr. Masters exhibited a large number of Spiders, beautifully mounted on glass slides, enclosed in glass tubes filled with clear spirits of wine. The specimens were affixed to the slides by ordinary clear gum, which rapidly hardens in spirits. The advantage claimed for this process of mounting is not only the improved appearance of the specimens, but the facility with which the most minute anatomical details may be examined under the microscope, without the necessity of removing the specimens from the slide or tube.

MONDAY, 27TH AUGUST, 1877.

W. J. STEPHENS, M.A., President, in the Chair

DONATIONS.

Proceedings of the Royal Society of New South Wales, 10th Vol. (1876), from the Society.

Compte Rendu de la Société Ent. de Belgique, Ser. II., No. 39, from the Society.

Sobre Algunos Arachnidos de la Res Publica Argentina, from Prof. Thorell, of Upsala.

Notices of some Spiders from Labrador, from Prof. Thorell, of Upsala.

Etudes Scorpiologiques, by the same.

PAPERS READ.

MOLLUSCA of the Chevert Expedition.

By J. BRAZIER, C.M.Z.S., Corr. Mem. Roy. Soc. Tas.

CLASS CEPHALOPODA.

FAMILY NAUTILIDÆ.

1.—NAUTILUS POMPILIUS.

Nautilus pompilius, Linn. Syst. Nat., ed. 12, p. 1161; Hanley's Ipsa. Linnæi Conchylia, p. 155; Lamarck's Anim. Sans. Vert. tome 7, p. 632; Wood Ind. Test., ed. Hanley, p. 73, pl. 3, fig. 1; Burrow Elem. Conch., pl. 12, fig. 2; Sowerby Thes. Conch., vol. 2, p. 463, pl. 97, fig. 1, pl. 98, fig. 6; Reeve Conch. Icon. pl. 1, sp. 1.

Hab. Warrior Island, Torres Straits; New Caledonia, New Hebrides; Solomon Islands; Coogee Bay and the mouth of the Bellenger River, New South Wales.

I obtained one specimen at Coogee Bay, south of Sydney, thrown on shore after the great easterly gale of 1857.

2.—NAUTILUS AMBIGUUS.

Nautilus ambiguus, Sowerby Thes. Conch., vol. 2, p. 464, pl. 97, fig. 2.

Hab. Cape Grenville, North-East Australia, found on the beach.

This species is thicker, wider at the aperture, more nearly all white, and more depressed round where the umbilicus should be than *Nautilus pompilius*, Linn. The vast number of specimens which I have seen from Torres Straits of *N. ambiguus* are all of one character.

3.—NAUTILUS STENOMPHALUS.

Nautilus stenomphalus, Sowerby Thes. Conch., vol. 2, p. 465, pl. 97, fig. 3; Reeve Conch. Icon., pl. 5, sp. 4.

Hab. Darnley Island, Torres Straits; Aneiteum, New Hebrides (Brazier.)

CLASS PTEROPODA.

ORDER THECOSOMATA.

FAMILY CAVOLINIDÆ.

4.—CAVOLINA QUADRIDENTATA.

Hyalæa quadridentata, Lesueur Voy. Bonite, Moll. t. 4, fig. 25, 32; Desh. ed. Lam. Anim. Sans. Vert. tome 7, p. 419.

Hab. Darnley Island, Torres Straits, 30 fathoms, 1 specimen found.

5.—CAVOLINA LONGIROSTRA.

Hyalæa longirostris, Lesueur Voy. Bonite, Moll. t. 5, fig. 7, 13; Desh. ed. Lam. Anim. Sans. Vert. tome 7, p. 420.

Hab. Princess Charlotte Bay, North-East Australia, 13 fathoms; Darnley Island, Torres Straits, 30 fathoms.

A vast quantity of this species was obtained at both the above localities; they appear to fall from the surface of the ocean to the bottom of the sea bed.

CLASS HETEROPODA.

FAMILY MACGILLIVRAYIIDÆ.

7.—SINUSIGERA MICROSCOPICA.

Struthiolaria microscopica, Gray in Voyage of the Blossom.

Chelstropis Huxleyi, Forbes in Voyage of the Rattlesnake, vol. 2, p. 385, pl. 3, fig. 9a. 9b.

Hab. 360 miles North-East of Sydney, New South Wales. Taken in the towing net on a calm day. The surface of the ocean appeared to be covered with them.

The appendix by Mr. Ralph Tate to Woodward's Manual of the Mollusca, 1875, 3rd edition, says that *Sinusigera*, D'Arbigny, *Chelstropis*, Forbes, is the fry of species belonging to the *Muricidæ*. He also states that the *Macgillivrayia* only comprises the larva forms of several species of *Dolium*; the fact is, that it is like a good many more things in Zoology not thoroughly worked out at the present time. There is one thing certain that the *Macgillivrayia* is operculated. I don't see that it can be placed with *Dolium*, a genus without operculum.

The Echini of Australia

(including those of the Chevert Expedition.)

By the Rev. J. E. Tenison-Woods, F.G.S., &c., Corr. Mem. Linn. Soc., N.S.W.

Ever since the publication of Prof. A. Agassiz's great work, "Revision of the Echini,*" the determination of species has been a comparatively easy task. These singularly interesting organisms, whose forms vary as far as it is possible, while retaining a uniform type, have been but little understood until very lately. Even now much remains obscure about them, and their classification consequently is hardly a natural one. In past times this has led to misconception of characteristic features, and consequently a host of genera. Their different aspects at various stages of growth has also been little known, and this has led to an almost endless multiplication of species, and consequently a most disheartening amount of synonyms. Prof. Agassiz has remedied much of this. Carefully studying each species within his reach, especially in its various stages of growth, he has made himself thoroughly acquainted with the limits within which

*Printed for the American Government in 1873.

Echini vary in their progression from the ova to the adult state. Thus he has come to understand to a certain extent, the structure, homologies, anatomy, and physiology of the order. He has, with extraordinary industry and care, watched their habits as far as he could, from those within the range of his observation. He subsequently visited every museum in Europe where type specimens were preserved, and was even fortunate enough to discover the types of some of the oldest authors. The result has been an exhaustive monograph. It is a treatise on all that has been done in the matter. It is also a history of the synonomy, and, as a matter of course, its rectification. It contains besides, a judicious arrangement of the genera, from a careful study of the relations of each species. It is finally a descriptive catalogue, as perfect as such a catalogue can be made in the present state of our knowledge of all the known species. The amount of work thus done is easily seen to be enormous. Dealing with the bibliography and synonomy alone would seem almost a labour of years.

The subject is one of especial interest and value just now, and deserves all the attention it has received. A very small acquaintance with Palæontology will tell what an important element the order is in estimating the earth's past history; and now that deep sea dredging has brought so many new friends and old relations of Echini to light, the order may be said to be of the utmost importance. Urchins are generally better preserved than most shells in strata, and being denizens of great depth, they often remain to tell a tale when all else has disappeared.

It will very likely be thought that very little is as yet known of the Echini of Australia, but this would be a mistake. It is true that no special study has been made of them, but many of its species have a very wide range, and the coast has been pretty well explored.

A very extensive list of Australian species is contained in Prof. Agassiz's volume, yet it is true to say, that beyond the fact that such species exist on the coast, nothing beyond has been ascertained. Now, Australia being a very large country, it is not

much more information to say a species is found in it, than to say it is found in Europe or America. I venture to say that there is as much difference between the marine fauna of North and South Australia, as there is between that of East and West America, Specimens have been sent to museums from various parts of Australia, and as far as I am aware, with but little satisfactorily recorded as to the precise habitat, habits, or bathymetry of any species. It is therefore with considerable pleasure that I accepted the request of Mr. Macleay to describe the ECHINI collected by him in the Chevert Expedition, together with those contained in his extensive museum at Elizabeth Bay. It will scarcely surprise any one to learn that only three new species have come under my notice, as the order has been so very exhaustively treated by Professor Agassiz. The new species are 1st, a small *Echinus*, *E. Darnleyensis*, which was found rather abundantly at Darnley Island and which is very near to a South American species, *E. magellanicus*, which is known to occur at New Zealand; 2nd, a new *Evechinus*, *E. australis*; 3rd, a new *Echinanthus*. But while finding but three new species, I have been able, from this collection, and from my notes made at the various Australian museums, and my own observations on the coast during many years, very much to increase the list of the Australian Echini fauna. I think I may say also that I have added some information as to habits and habitats. Unfortunately, no Australian collection that I am acquainted with is well supplied with our common Australian genera and species, and none have series to illustrate the modes of growth, so that I am unable to add anything to our knowledge in this direction, and that knowledge is very meagre indeed.

I find from my investigations into the matter, that Australia may be divided into three provinces:—I. The N. Eastern. 2. The Eastern. 3. The Southern. I do not deal with the Western fauna, for I know so little of it, that my remarks would possess no value. The Southern has a peculiar fauna which possesses what are called the truly Australian genera, such as *Amblypneustes*, *Holopneustes*, *Microcyphus*, and *Linthia*. The

Eastern has a few peculiar forms, such as *Centrostephanus Rodgersii*, *Phyllacanthus imperialis*, together with Pacific species, such as *Metalia sternalis*, *Mespilia globulus*, and *Hipponoë variegata*, &c. The North-Eastern province seems entirely a derived fauna, in which the E. Australian, Indian, and Pacific species meet. The *Echinus* mentioned above is the only peculiar species. The N. Eastern province includes the species of Darnley Island and Torres Straits, with say Rockhampton for its centre. The Eastern province would include the East coast from Cape Byron to Cape Howe, including E. Tasmania. The Northern provinces would extend from Cape Howe to Port Lincoln, west of Spencer's Gulf. These provinces are only meant to be somewhat roughly estimated, but they correspond with what I have noticed as to the Mollusca fauna.

I cannot find that there is much connection between our tertiary fossil fauna, and what we see in the present Australian seas. Some few—three in all—are common to both, while not only are Australian genera remarkably absent, but even a whole sub-order—the Desmosticha—is scarcely represented at all in our fossil formations. In fact, the separation between our tertiary and recent Echini is almost complete. A very few species and a small number of genera are common to the Tertiary and recent period, but our commonest forms, *Strongylocentrotus erythrogrammus*, *Amblypneustes ovum*, *Hipponoë variegata*, *Echinocardium australe*, *Linthia australis*, &c., are not even generically represented.

I now proceed to describe the Australian recent fauna. In doing so, I have given a brief diagnosis of the sub-orders, families, genera and species. I have strictly followed the arrangement of Prof. Agassiz in this, though I have summarized his details, and re-arranged the most of them, so as to facilitate reference. The notices of habits, depths, habitat, &c., are always from my own observations, unless otherwise stated. The following explanation of terms will be found useful :—

Actinal surface.—The under side.

Actinosome.—The central orifice, or mouth, in life covered with a membrane, plates, or spines.

Abactinal surface—The upper side.

Ambulacra.—The space included between the two poriferous zones.

Interambulacra.—The five areas between the ambulacra.

Ambitus.—The rounded edge of the base on which the test rests.

Genital plates and ocular plates are sets of five each, with pores at their edge or centre. They are referred to here as the G. and O. plates. The O. plates are sometimes without pores. Within these is the anal system, which is composed of one or many plates, and has one anal slit or pore.

The madreporiform body is a spongy tissue on one of the G. plates.

To abbreviate references, the ambulacral and interambulacral areas are always referred to as the A. and I. areas.

Sub-Order 1.—Desmosticha. Hæckel, 1866.

(The Endocycla of Wright.)

Echini, more or less circular in outline. Anal system completely surrounded and enclosed by reproductive and ocular plates. *Actinosome central.* Zones of pores extending from anal system to actinosome in simple vertical rows or disconnected arcs. Jaws highly developed, supported upon prolongations (auricles) of the edge of the actinosome either as arches or disconnected supports. Five rows of ambulacral and five interambulacral plates only. If the *test* is elongated in form, the longitudinal axis is indicated by the position of the madreporic body. Actinal system covered by a flexible membrane attached to the jaws, either bare, or more or less covered with plates. Gills extending through openings in the edge of membrane, corresponding to cuts more or less marked on the edge of the actinosome. Tubercles carrying the spines form vertical or

horizontal rows, or sometimes both, on the A. and I. plates. Spines large, compared to the size of test, and less numerous than in the other sub-orders.

Family 1.—Goniocidaridæ. Hæckel, 1866.

Actinal and abactinal system large, and of nearly equal size. Pores composed of single pairs in a narrow vertical zone (except Diplocidaris—fossil) extending to buccal membrane, A. area narrow with many small plates, I. area wide with few large coronal plates, each surmounted with a single primary perforate tubercle surrounded by a large scrobicular circle. The primary I. spines are large, while those of the actinal system are small flattened papillæ, and never ornamented, extending also over the imbricated buccal membrane. Teeth less complicated than *Echinidæ* or *Diadematidæ*. Auricles, independent arches originating from the I. spaces. Actinal cuts not in coronal plates, but near the actinosome in the edge of the buccal membrane. Teeth like a gouge; the jaws have not the large triangular foramen of the Echinidæ, nor are the sides of the jaws connected over their central part.

Genus 1.—Phyllacanthus. Brandt, 1835.

Test swollen *circular, turban shaped*, thin, ambulacra almost straight or very slightly undulating. Poriferous zone, broad pairs of pores connected by a slight horizontal furrow. Primary spines variable, cylindrical, triangular, flattened club-shaped, elongate, fluted, or with highly developed lamellæ or rows of secondary spines. Tubercles perforate, mammary boss smaller than on Cidaris; scrobicular circle large, with very prominent granules. Areola deeply sunken.

This genus must not be confounded with the large "Pencil fish" (*Hetrocentrotus mammillatus*) so commonly preserved as an ornament, with its long club-shaped spines, brown, tipped with red, and ringed with yellow. In that species it will easily be seen that the test is *oblong*, and the anal system very small.

PHYLLACANTHUS ANNULIFERA, Lamarck. Scrobicular circle very distinct, formed by a double row of secondary tubercles. Secondary spines and papillæ elongate, tapering, yellowish with greenish longitudinal stripe in the middle. Primary spines, nearly twice the diameter of the test, gradually tapering towards the extremity, often fluted, cupuliform, granulation in irregular rows with scattered larger spines along the body of the shaft.

Not very common. Found in shallow water at low tide, generally sandy bottom. Specimens from Tasmania and N. S. Wales coast. MacLeay's Museum. Endeavour River—"Chevert Expedition." It seems to have a wide range in Eastern Australia.

PHYLLACANTHUS DUBIA, Brandt. Closely allied to *P. imperialis*, but smaller. Granulation of abactinal system coarse. O. plates smaller, and plates of anal system longer and less numerous than *P. imperialis*. Six primary tubercles on each row. The primary spines are nearly cylindrical, sometimes swelling near base, or gently tapering towards extremity, and deeply grooved.

Common in Tasmania, E. coast, Botany Heads, Port Jackson, Apollo Bay; Victoria, King's Island, Bass Straits. Sandy bottom, 10 to 20 fathoms.

PHYLLACANTHUS IMPERIALIS, Lamarck. The primary spines of this species are like the Pacific "Pencil fish" (*Heterocentrotus mammillatus*), but much fewer in number. Primary tubercles, six in each row, even in the largest specimens (75 millim. in diam.) Scrobicular circle, well defined circular, limited by one row of rather prominent secondaries.

Rare, Port Jackson, Port Denison, Port Molle. Station unknown, as the specimens seen by me have all been cast up on the beach after storms. There is no specimen in the MacLeay museum.

PHYLLACANTHUS VERTICILLATA, Lamarck. This species is distinguished by its peculiar spines, which have circles of lamellæ at intervals along the shaft. The primary tubercles are small, not prominent. I have never seen a specimen which I could rely upon as coming from Australia. Though it is given as Australian on the authority of the Pourtales. It is probably tropical.

Genus 2.—STEPHANOCIDARIS, A. Agassiz, 1863.

Test exceedingly thin, abactinal system large, thin, packed with milliares, moveable; primary tubercles more numerous than last genus.

STEPHANOCIDARIS BISPINOSA, Lamarck. Primary spines flattened, tapering with very marked serrated edges, and smaller spines along medium line of shaft. Primary tubercles small, mammary boss little prominent, auricles very high and thin.

Said to occur in Australia, on very good authority, but I have never met with a specimen.

Genus 3.—GONIOCIDARIS, Desor, 1846

Test frequently higher than broad, coronal plates more numerous than in any other genus of the family. Tubercles perforate, with a smooth base. A. narrowest of the family. Poriferous zone almost as broad as the medium A. region. Medium A. and I. areas bare, sutures of plates sunk, forming deep zigzag vertical sutures, with pits at the angle of two plates. Spines cylindrical, covered with thorny spines pointing irregularly outwards, spreading out, frequently cupped at the extremity.

GONIOCIDARIS GERANIOIDES, Lamarck. Test high, thick, as many as ten primary tubercles. Scrobicular circle small, circular, well defined by a close row of secondary tubercles. Poriferous zones narrow, with high ridge separating the pairs of pores. Primary spines fluted, swelling near base, cupped at the top; near upper part of spine, fluting often broken up into disconnected lamellæ, or irregular rugose projections.

Common. Darnley Island, New Guinea, Endeavour River, "Chevert Expedition."

GONIOCIDARIS TUBARIA, Lamarck. Test somewhat flattened. Eight primary tubercles. Scrobicular circle elliptical, mammary boss small, not prominent. Differs strikingly from the preceding species in the structure of the primary spines, which are somewhat swelling at the base, tapering, cupuliform. Shaft ornamented by irregular longitudinal rows of small flattened disconnected pointed lamellæ, forming diminutive spines.

Port Jackson, Swansea, Tasmania, King's Island, Hobson's Bay, Sealers' Cove, Portland Bay, Guichen Bay, Encounter Bay, and generally on South Australian coasts.

The family ARBACIADÆ is not represented on the Australian coasts.

Family DIADEMATIDÆ, Peters, 1853.

Test thin, with a bare forking I. space. A. narrow. Is depressed near abactinal system. Spines long, exceeding test, hollow, verticillate. Tubercles of both areas similar. Actinal cuts, moderate.

Genus I.—DIADEMA, Schynvoet, 1711.

Test slightly pentagonal, flattened at both poles, thin. Tubercles in two vertical rows, those of A. smaller than I. perforate and crenulate. Porif. zones narrow. A. narrow compared to I. and often rising considerably above them. Pores in simple pairs, forming arcs round adjacent tubercles. Actinal system large, cuts 10, broad, but not very deep. Membrane strengthened by small limestone plates. Anal system *covered by a thin naked membrane*, anal openings at end of a tube, extending like a proboscis beyond anal system.

DIADEMA SETOSUM, Gray. Easily distinguished by its long slender needle-like hollow spines, extending three or four times the diameter of test. Dusky in colour, but banded with darker spaces. The colour of the test is blackish, on which the white tubercles are very conspicuous. Many specimens were obtained by Mr. Macleay, from Darnley Island, 10 to 20 fathoms, on sandy mud bottom. It had been found hitherto in almost every tropical sea, except the Australian.

Genus II.—CENTROSTEPHANUS, Peters, 1855.

Test globular, buccal plates 10, all carrying spines, no bare forking interambulacral space. Abact. syst. nearly circular, and *covered by distinct plates*. Tubercles of both areas similar, crenulate, perforate, and arranged in two vertical rows in the I. zone. Spines stouter in shape than last genus, but more hollow, being mere shells. Actinal openings slight. Pores in arcs of three.

CENTROSTEPHANUS RODGERSII, A. Agas. Thin, very spiny, urchin with long stout but very brittle spines of deep reddish purple colour. It is not uncommon about Botany Heads, at low tides in a few feet of water.

Genus 3.—ASTROPYGA. Gray, 1825.

Test so thin that it is more or less flexible, greatly depressed. I. sunken frequently far below the bulging A. Bare median I. space forking, and each plate having a colored pit. Tubercles uniform, perforate crenulate, two vertical rows on the I., many on the A. Spines rarely attaining half diam. of test, uniform, slender. Porif. zone, rather broad, pores, in four irregular vertical rows. Anal system plated, but not otherwise different from *Diadema*.

ASTROPYGA RADIATA. Leske. A large depressed test of dull whitish green and reddish brown. The anal system and bare median I. space are reddish with spots of violet. The spine slender, generally red. This species has been known to naturalists for more than a century, but has never before been found in Australia. Four large specimens were dredged by Mr. MacLeay, in the Chevert, off Darnley Island, at 10 to 20 fathoms in sandy mud.

Family ECHINOMETRIDÆ. Gray, 1855.

Test with an oblique axis, elongated or oblong, with more than three pairs of pores to each arc.

Genus 1.—HETEROCENTROTUS. Brandt, 1835.

Test very thick, elongated; tubercles few, massive, smooth and *imperforate*. Porif. zone very narrow above the ambitus, pores on long narrow arcs of numerous pairs round the tubercles; below the zone widens much more than in *Echinometra*, becoming broader than the I. space. Actinosome, very large, cuts slight. Primary spines large, club-shaped, angular, twice the diam. of test. Round the actinosome they are flattened; auricles tall, slender, with large opening, and connected by a low ridge.

HETEROCENTROTUS MAMMILLATUS. Klein.

The large "pencil fish," well known to collectors. It is found throughout the Pacific, and four or five specimens were dredged by the "Chevert" off Darnley Island. This is the first time an Australian habitat has been ascertained. Ten to twenty fathoms on sandy mud.

This species must not be confused with one very like it from the Mauritius. "The secondary spines of *H. mammillatus*," says Mr. A. Agassiz,* form a sort of loose pavement, somewhat similar to that covering *Colobocentrotus;* they cover the whole test, are small, short, usually flaring and truncated at the extremity; while in *H. trigonarius* they are bevelled.

Genus 2.—ECHINOMETRA, Rondel, 1554.

Test thin, elongate, tubercles large imperforate, not crenulate, slightly smaller in the A. area. Poriferous zone moderately broad pores in very prominent arcs of many pairs. Actinosome large, cuts shallow, often broad. Jaws very powerful (they are comparatively small in *Heterocentrotus*) auricules very massive. Actinal membrane with 10 buccal plates, on which there are usually clusters of spines. Spines quite stout, somewhat long, and longitudinally striated.

ECHINOMETRA LACUNTER, Leske.

A very variable species, found abundantly under stones in all tropical Eastern Australia. It is not mentioned as Australian in Mr. Agassiz very extensive lists. Mr. Macleay brought specimens from Cape Grenville, Endeavour River, Darnley Island, and New Guinea. The largest specimens were scarcely two inches in the longest diameter. The colour of the spines varied from purple to straw colour, but the most were banded, and the whole appearance of the test is very much like a small porcupine. The spines are swollen, generally falling off when the test is dry, and the ground color of the shell is dull violet.

* *Revision of the Echini*, p. 429.

Genus 3.—Parasalenia, A. Agassiz, 1863.

Arcs of pores of three pairs only, anal system very small, closed by only four plates. Buccal membrane carrying minute spines.

Parasalenia gratiosa, A. Ag.

Very like *E. lacunter*, and generally associated with it. The spines are often extremely alike. I have met with no well authenticated case of its occurrence in Australia.

Genus 4.—Stomopneustes, Agas, 1841.

Test nearly circular, axis very slightly oblique. Actinal surface *flat;* actinosome small, cuts scarcely marked, pores in *three irregular vertical lines.* Two principal rows of tubercles in both areas, but the I. area almost filled up with somewhat smaller ones. Spines long, stout, and finely striated.

Stomopneustes variolaris, Lamk.

This species (the only one of the genus) is easily known by the continuous groove extending along the vertical suture in median I. space. The specimen in the Sydney Museum is very much larger than any of the dimensions given by Agassiz, as the following dimensions will show :—Diam. 102, alt. 52, abactinal system 15, actinosome 25 (exclusive of cuts), spines from 45 to 62, and about 4 mil. at base. It is probable that this specimen comes from North Australia, but the precise locality is unknown.

Genus 5.—Strongylocentrotus, Brandt, 1835.

This includes all species having a somewhat circular or subpentagonal, regularly arched, or slightly depressed test, with smooth, imperforate, not crenulate tubercles of unequal sizes, forming primary and secondary vertical rows. Pores arranged in arcs of at least four or five pairs. Actinosome decagonal, very slight cuts, buccal membrane bare, spines moderately slender, longitudinally striated, longer proportionately than those of true Echinus, and more slender than *Sphærechinus*.

This genus is well represented in Australia, and generally goes by the name of *Cidaris*. It lives in the hollows of rocks, browsing on seaweed, and is often left by the tide at low water. The spines are exceedingly sharp, and inflict painful wounds when carelessly handled. We have three species in Australia.

STRONGYLOCENTROTUS ARMIGER, A. Ag.

Test thin, flattened above, regularly arched below. Is at once distinguished from its congeners by its short, thick, swollen spines. Largest primary tubercles of both areas within three plates of abactinal system in the I. space. They cover the abactinal part of the flattened test, decreasing rapidly towards the ambitus and actinal surface. I have not seen this species, and do not know in what part of Australia it occurs.

STRONGYLOCENTROTUS EURYTHROGRAMMUS, Valenciennes.

The commonest of our species. Easily distinguished by its olive brown spines, though there are white varieties in Tasmania. Test regularly arched, subglobular or depressed. Two principle vertical rows of tubercles in the A. and I. space, a well defined vertical row of small tubercles separating the porif. zones from the primary tubercles in the I. space. Two irregular medium vertical interambulacral rows. Coronal plates closely crowded with small secondaries; the intervening space again crowded with closely packed milliaries surrounding them. Porif. zone broad, pores arranged in oblique arcs, separated by irregular rows of secondaries. Cuts very moderate. Membrane thin, with a few elliptical plates.

Found at low water in all E. Australia, as far as Cape York; Southern Australia, Bass Straits and Tasmania.

STRONGYLOCENTROTUS TUBERCULATUS, Lamarck.

Test greenish, spines large, sharp, and long, in colour, dark violet, or black. Anal system elliptical, covered by small plates, carrying a few minute tubercles. Madreporic body large and pentagonal. Two main rows of tubercles in the A. and I. spaces, each flanked in the I. space by a smaller one, meeting in a single

vertical row in the median space. Coronal plates loosely covered by minute tubercles and few milliaries. In the A. space there is one irregular central vertical row of small tubercles, with one exterior vertical row of tubercles somewhat larger, from the base of which smaller tubercles running obliquely, separate the arcs of pores. Porif. zone formed of arcs of five to eight pairs, more or less closed above the ambitus. Cuts not deep, but broad and well defined. Membrane thin, covered by few very distinct elliptical plates. It is larger than the last species, and the spines longer. It is not common, and found generally in N.E. tropical Australia, but I have seen a specimen from Port Stephens, and another from New Zealand. Neither this species nor *S. armiger* was found by the "Chevert," nor are there specimens in the Macleay or Sydney Museums.

Genus 6.—Sphærechinus, Desor, 1857.

Test thick, tubercles of uniform size, imperforate, not crenulate, numerous, closely packed together on both areas. Actinosome decagonal, with deep cuts. Membrane thin, with four prominent plates. Pores in closed arcs of four to eight pairs.

Sphærechinus australiæ, A. Agas.

Colour of test violet, with tubercles of dull green, spines short, tolerably stout, violet at base with greenish tips, old specimens, but when fresh the color is entirely a blue purple. In the I. space there are six to eight vertical rows of primary tubercles near the median space separating the principal rows, closely packed secondaries fill the rest of the coronal plates. The most prominent row of primaries is half way between the median line and porif. zone. Anal system large. The porif. zone narrow. Pores arranged in arcs of three towards the exterior, well separated from the inner fourth pair, which is quite hidden among the tubercles, forming almost an independent vertical row.

Not common. Often found, but stripped of its spines. It is sometimes washed ashore on the sandy beaches of the South Australian coast. Found also in Bass's Straits, King's Island,

Swansea, Tasmania. Agassiz gives also West Coast of Australia, New Zealand, and the Mauritius, as habitats. It was not obtained during the Chevert's dredgings.

Family ECHINIDÆ, Agassiz, 1846.

Arcs of pores of three pairs only.

Genus 1.—TEMNOPLEURUS, Agassiz, 1841.

Small urchins, test generally regularly arched, and somewhat conical. Actinal part more or less concave, tubercles crenulate, imperforate, forming two principal vertical rows in each area, pores in simple rows, but undulating and irregular, deep lateral and vertical grooves at the angles of the plates. Spines long, slender, fluted, those above shorter; auricles broad, with high connecting ridges and small foramen.

TEMNOPLEURUS TORUEMATICUS. Klein.

This, says Mr. A. Agassiz, is one of the earliest species figured by old authors. It is easily recognized by its furrows. In the I. space there are for each plate along the horizontal suture, two deep rectangular furrows, separated by the principal row of primary tubercles. Spines, long flattened, of a pink color, with three or four purplish transverse bands. Actinosome, small, cuts scarcely visible; membrane, bare; ten buccal plates, small, prominent. Auricles, high, thin, with a high connecting ridge and minute foramen.

Specimens of this interesting urchin were dredged by the Chevert expedition at Cape Grenville, Endeavour River, Darnley Island and New Guinea. Generally occurring on sandy mud, at from 10 to 20 fathoms. It was not hitherto known in Australia, though not uncommon in the Indian Ocean, China, Japan, &c. Diam. from 23 to 55 mil.

Genus 2.—MICROCYPHUS Agass, 1841.

Test stout; tubercles few, small, leaving marginal bare spaces in the I. area, but regular in the A. Porif. zones, narrow; pores

in double irregular vertical rows. Pores at the sutures indistinct in the median A. and I. spaces, but well-defined at the junction of the porif. zone and I. plates. Spines thin, slender, short.

MICROCYPHUS MACULATUS. Agass.

In the I. space the central part of the coronal plates have a bare lozenge-shaped area parallel with the horizontal sutures of the plates. These spaces rapidly decrease towards the ambitus, and disappear on the actinal surface where the tubercles are larger, occupying the whole surface of the plates. The general color of the test is greenish yellow, with bright violet bare sutural spaces. Diam., 11 to 37 mil. This species is tropical, but I have seen one specimen only which was said to come from the coast of N. S. Wales.

MICROCYPHUS ZIGZAG. Agass.

Much smaller and more globular than the preceding. In the I. space the tubercles cover, as a triangular shield, the greater part of each plate, leaving the median space, and a short length of the horizontal sutures bare from the anal system almost to the actinosome. Sutural pores small, often wanting. Porif. zone and tuberculiferous parts greenish yellow; bare spaces, dark chocolate color. Diam., 12 to 25 mil. I have seen specimens of this species in Tasmania, where it was thrown up on the sand; and I have found it myself at Port Denison, N. Queensland. There are specimens from West Australia and Tasmania in the British Museum.*

Genus 3.—SALMACIS. Agass, 1841.

Test somewhat conical and thick; pores trigeminate, tubercles crenulate, not perforate, in several vertical rows and *primary regular horizontal rows* as well. A. system broad; median I. spaces frequently bare, angular pores at junction of plates; abactinal system prominent; actinosome small, with slight indentations; spines short, slender, finely striated. Auricles high, thin, with high connecting ridges and small foramen.

* Agassiz Revision of the Echini, page 146.

One specimen of this species was dredged by the Chevert off Darnley Island and others, have been found on the N. Queensland coast, though it is rare. Test when dry yellowish brown, moderately thick, subglobular, and thickly covered with short-pointed greenish spines, banded with five or six transverse bands of violet. The spines below are much longer, broader, frequently flattened. Actinosome moderate, decagonal, with slight indentations, anal system large. Pores at the median junction small, horizontal sutures of the coronal plates slightly furrowed. Diam. from 44 to 53; alt. from 27 to 35 mil. (Agass.)

SALMACIS RARISPINA, Agass.

Test usually quite conical, much thinner than any other species. The coronal plates above the ambitus are comparatively bare, owing to the distance of the primary tubercles, and the small number of the milliaries. The test above the ambitus is greyish, with lozenge-shaped figures along the horizontal sutures. Actinosome small, quite sunken, and almost circular. Spines, *long, slender, pointed, somewhat flattened*, straw color, with seven to eight bright purplish bands. Sutural pores quite minute. Diam., 25 alt. 16 mil. Darnley Island and Cape York, a few specimens dredged by the Chevert, at about twenty fathoms.

SALMACIS GLOBATOR. Agass.

Test quite stout. Tubercles remarkably uniform, and forming very regular horizontal and vertical rows, slightly larger on the actinal side. Porif. zone not so wide as other species, and the sutures of the plates becoming in places deep furrows, almost as marked as Temnopleurus. The spines (which easily fall off) are *short, stout, pointed*, greenish and tipped with violet. Color of test pinkish, sutures lighter in color, yellowish below. Auricles remarkably broad and thin, with high connecting ridge. Diam. from 60 to 70; alt. 36 to 52 mil. Port Jackson, dredged off the Sow and Pigs rocks, by Brazier, Bass's Straits, Kangaroo Island, S. Australia. Not common, and rarely found with the spines attached.

SALMACIS SULCATA. Agass.

This species is closely allied to *S. bicolor*. It differs according to A. Agassiz in having a more deeply lobed and slightly longer actinosome; the abactinal system is less prominent, and some other details. The test when dry, a yellowish green, with sea green band on the I. area, with spines of the same color at the base tipped with dark violet; they are sharper, and more uniform in size. In some, however, they were cream colored, and banded with 5 or 6 dusk brown lines. Diam., 48 to 67; height, 27 to 40 mil. New South Wales coast. Agassiz says that the young, figured by Savigny, would be readily mistaken for young Echinus, as the difference in size of the vertical rows of the primary tubercles is not seen at that age.

Genus 4.—MESPILIA. Desor, 1846.

Small ball-shaped urchins, with a thin test, and the *median areas quite bare as far as the ambitus*, and whole lower surface tuberculated and covered with spines. Porif. zones broad; pores arranged in two irregular vertical rows. Spines short, hair-like, slender. Actinosome decagonal, small, membrane bare. Auricles high, ridge low, foramen large.

MESPILIA GLOBULUS. Agass.

This beautiful urchin is easily known. It is small, and round as a ball. The bare spaces are dark grey green, the spines, closely packed, and of uniform length, are light green at the base, and banded at the end with white or reddish purple. The bare spaces have a silvery appearance on the dry specimens from the pedicellariæ. It is not common; there are specimens in Mr. MacLeay's Museum from New Caledonia. Agassiz gives the Pacific, Japan, China, and Phillippine Islands as its habitat. It has been found between Brisbane and Rockhampton—at Lady Elliot Island.

Genus 5.—AMBLYPNEUSTES, Agass, 1841.

Urchins spherical, or even with a greater altitude than breadth. Test thin, anal system small but prominent; actinosome small

without cuts; porif. zones broad, pores in well-defined vertical rows or short arcs of three pairs. A. space broad, tubercles of both areas, small and uniform in size; median spaces frequently bare. Spines few, slender, far apart. Sutural pores at angles of plates; auricles tall, slender, scarcely meeting above large foramen, with high connecting ridges.

AMBLYPNEUSTES OVUM. Lamk.

The common globular urchin of all the southern coasts where it is often found in immense numbers, drifted up by the tide on sandy beaches. It is not at all common on the east coast of Australia. As there are other species very closely resembling it, I must define them, for they are nearly always confused in collections. The general color of the test is light olive, but very variable in the depth of shade; in fact, I have seen it of cream color or yellow. Darker zigzag lines parallel to the median sutures, with sometimes lozenge-shaped figures near the porif. zone. Darker bands of color often extend from pole to pole. The spines are *short*, slender, pointed, dark green at base, tipped with red violet or orange. Anal system somewhat large. Sutural pores minute or absent.

AMBLYPNEUSTES GRISEUS. Blainville.

Test comparatively stout, somewhat depressed; remarkable for its broad poriferous zone, and the size of the anal system. Sutural pores more distinct. The A. space narrower than in *A. ovum*. Color, greenish yellow to grey. Spines stouter, and less tapering than previous species; light green or violet, tipped with darker color or orange. This species has exactly the same range as the former, but is the less common of the two,

AMBLYPNEUSTES FORMOSUS. Valenciennes.

Thin, ovoid, remarkable for the number and distinctness of the sutural pores. Test brownish pink, with yellow porif. zones, ornamented by dark brown lozenges. Spines, long, slender, pink at base, darker at the top, or red or orange. Generally smaller than A. ovum. The same habitat as the last, but more common in Tasmania. Found also in New Zealand.

AMBLYPNEUSTES PALLIDUS. Lamarck.

Supposed to be a variety of *A. griseus*, by Agassiz. It is distinguished by its violet color, on which the white tubercles stand out with brilliant distinctness. I do not know the species, the habitat of which stretches out from South Australia across the Pacific.

Genus 6.—HOLOPNEUSTES, Agassiz, 1841.

General character of *Amblypneustes*, but, A. space broader than I., owing to the peculiarity of porif. zone, which distinguishes this genus. The pores have a regular vertical row at each side between which they are packed closely, with apparent irregularity. Spines like *Amblypneustes*, but swollen at the extremity.

HOLOPNEUSTES POROSISSIMUS, Lutken.

Test globular, stout. Porif. zone broader than median A. space. Pores forming an outer very regular vertical row, inner row somewhat undulating, while the remaining space is apparently filled with irregular pores. Spines short, stout, swelling at extremity, coarsely striated longitudinally, forming lamellæ at the swollen extremity, but otherwise, the shaft is uniform in width. Milled ring very prominent. Color, greenish at base, red at tip. Color of test greenish blue, shading to violet in median spaces. Tubercles of lighter colour.

Habitat.—All South Australia, Tasmania, Bass' Straits. I have seen no authentic specimen from E. Australia.

HOLOPNEUSTES INFLATUS, Lutken.

Porif. zones narrower than in preceding, in three well marked vertical rows, the outside ones quite irregular, and the middle somewhat undulating and disconnected. Test yellowish orange, with zones of darker tint. I have never seen this species.

HOLOPNEUSTES PURPURASCENS, Lutken.

The porif. zone is narrower than in either of the two previous species. The middle line of pores forms zigzag lines, and the outer row of pores is characterized by the great size of the inner pore. The younger specimens are a beautiful violet color, and the older ones a yellowish brown. I have not seen the species which Mr. Agassiz thinks may be only a variety of *H. porosissimus*.

Genus 7.—ECHINUS, Rondel, 1554.

Urchins for the most part small, round, with small smooth imperforate tubercles, in two principal vertical rows in the coronal plates of both areas, the other tubercles smaller and irregular. Actinosome small, cuts slight, membrane bare, with ten small plates. Spines somewhat stout, sometimes equalling the test in size. *Pores in arcs of three*, jaws weak, auricles slender.

ECHINUS MAGELLANICUS, Phillipi,

A small Echinus sent from Australia is supposed by Mr. Agassiz to be the adult of this species which occurs generally in Patagonia, Chili, and New Zealand.

ECHINUS ANGULOSUS, Agass., is said to occur in Adelaide.

ECHINUS DARNLEYENSIS, n. s.

This may be the Australian species which Mr. A. Agassiz identified with *E magellanicus*.* It is, however, quite different from that species, and found hitherto only in tropical Australia. Test small, circular, depressed, purplish, or livid, the tubercular rows and porif. zones being lighter in color. Primary tubercles in each area forming two vertical rows, the secondaries irregular, but with a tendency to form vertical and horizontal rows in the I. space, which is broader than the A. Sutures of coronal plates distinct, with two very distinct secondaries on each, between the primary vertical row of the I. and the porif. zone. Abactinal system sunken. G. plates large, long, with two or rarely three secondary tubercles irregularly placed on each, and G. pores large in groove at the end; ocular plates quite excluded, anal system with many plates, the opening distinct and round. Actinal surface rounded, depressed. Cuts slight. Membrane bare, with ten rounded small openings surrounded by Pedecellariæ. Opening for teeth scarcely visible. Jaws rounded, stout, auricles forming only slight thin processes, which do not meet. Pores in irregular arcs of three, forming narrow irregular line. Spines rather long, blunt, somewhat transparent, coarsely grooved, rose pink, dull

*Revision of the Echinidæ, p. 492.

green, or reddish, and sometimes banded or tipped with yellow. Diam, 25; alt., 12½ mil. Longest spines, 6 to 7. Diam. of actinosome, 10. Diam. of abactinal system, 7.

Cape Grenville and Darnley Island, on sandy mud, 10 to 20 fathoms.

This species seems to me to differ from *E. magellanicus* in the actinosome being larger; in the abactinal system, where the G. plates have only two tubercles, and in the color of spines and test.

Genus 8.—Hipponoë, Gray, 1841.

Echini of large size, and thin test. Tubercles small, smooth, imperforate, arranged in horizontal and somewhat irregular vertical rows. Medium A. and I. spaces frequently bare. Actinosome small, deeply notched. Porif. zones broad, in three vertical rows, outer ones regular, middle one irregular. A. area very broad. Spines short, stout, finely striated, not easily falling off.

Hipponoë variegata, Leske.

A very variable species, differing very much in various localities in size, shape, and color. The tubercles are very small, the porif. zones somewhat narrow, and the median areas seen from above, form five radiating bands, gradually increasing in width. These are blue or violet in the tropical specimens, which are somewhat conical and small. The Port Jackson specimens are much larger, rounded, depressed, and of a light cream color, but I have seen some from the same locality almost conical, and of deep brown color. It is not given as Australian in Mr. Agassiz's lists. Mr. Macleay obtained it at Cape Grenville, Endeavour River, Darnley Island, and New Guinea. Its habitat is generally tropical. If it were not for the fear of adding to the host of synonyms which this species has obtained, I should consider the large Port Jackson species as a variety to be distinguished as *Jacksoniensis*. It is found in shallow water, on a sandy bottom.

Genus 8.—Evechinus, Verril, 1871.

Very like Hipponoë; circular, somewhat depressed, tubercles very unequal, primaries in regular vertical rows, secondaries irregularly grouped round their bases. Porif. zone broad in three irregular vertical rows. Actinosome small; cuts slight: spines stout, tapering, rather short, very unequal in size.

Evechinus australiæ, n.s. Test thin, circular, or in small specimens obscurely pentagonal, depressed. Profile regularly arched, actinal region very slightly sunken. A. a little broader than I. Tubercles of A. slightly smaller than I. both surrounded by an irregular ring of secondaries and milliaries. Two vertical rows of primaries in the A. area, four in the I. at the ambitus, but the two inner ones diminishing in size at the actinal and abactinal region, while the two outer ones preserve their size and regularity to the edge of both regions. Porif. zone wide of three vertical rows. The two outer ones a regular vertical row of pairs, the middle an irregular arc of three pairs. Zones narrowing at abactinal region but only slightly at the actinosome. The three rows separated by two irregular rows of secondary tubercles with milliaries scattered between. Abactinal area wanting in all the specimens seen by me. Actinal region somewhat large, pentagonal; cuts deep, circumscribed by a raised margin. Auricles high, narrow, triangular and scarcely united over the large foramen; no connecting ridges.

Three specimens with no information as to habitat were found in the Sydney Museum, but I have every reason to believe they came from the N. S. Wales coast. They are bleached and without spines, the anal system has disappeared. The following are the dimensions in millimetres:—

DIAM.	ALT.	DIAMETER OF MOUTH.	ANAL SYSTEM.
36	18	13	$6\frac{1}{2}$
30	14	12	$4\frac{1}{2}$
27	13	11	3

Sub-Order 2.—Clypeastridæ, Agass., 1836.

Urchins generally depressed, scutiforum, with petaloid ambulacra, anal and apical system separate. Spines somewhat resembling regular Echini. Ambulacral pores of petals passing between the plates, and the ambulacral system greatly developed. Lines of minute pores extend at right angles to the general course of the porif. zone. Actinal surface with ambulacral furrows irregularily crowded with pores, the furrows terminating in the actinosome. Plates round, actinosome cuneiform, forming a buccal rosette. A. broader than I. Tubercles small, crenulate, and perforate. Teeth simple, articulating on the auricles, without the muscular system of Desmosticha.

Family Euclypeastridæ, Hæckel, 1866.

Test with simple supports, connecting the upper and lower floors, and covered with spines of a uniform structure. The supports are either internal pillars, needles, or radiating partitions.

Sub-Family Fibularina, Gray, 1855.

Small, globular, petals rudimentary, simple partitions radiating from the periphery to the actinosome.

Genus Fibularia, Lamk., 1816.

Ovoid, flattened anteriorly, partitions absent. Petals rudimentary imperfectly petaloid, not closing, diverging pores not congregated, few. Actinosome central, anus nearer to it than the edge.

Fibularia australis, Desmoulins.

A large ovoid species, measuring 20 mil., with large pentagonal mouth and large elliptical anal opening. I have never seen a specimen.

Fibula volva, Agass.

A very small elongate species, pointed at both ends, with mouth and anus round, close together, and small, the latter especially so. One specimen dredged by the Chevert at Bet Island, Torres Straits.

Sub-Family 2.—ECHINANTHIDÆ, Agass., 1872.

Large urchins, petals greatly developed, pillars on acute projections, connecting the two floors, ambulacral furrows straight, auricles two.

ECHINANTHUS TESTUDINARIUS, Gray.

This is the large depressed tortoise-like species, so common in Port Jackson, with a very concave under surface and depressed mouth. Petals broad, closed. The anal orifice is near the edge. It is found throughout the Pacific, even as far as California, the Red Sea, and Japan. Is a fossil on the Murray River beds.

ECHINANTHUS TUMIDUS, n. s.

I give this name to a large oval swollen urchin which is in the Sydney Museum, and which I have every reason to think came from the coast of N. S. Wales, though there is no precise information as to its habitat. It is regularly arched, dome-shaped, rising gradually from the edge to a height of nearly half the length. The apex a little flattened, the edge is very thick and rounded, but thinner posteriorly, and a distinct slight depression at each side. The base is flat, but more so posteriorly than anteriorly, so as to bring the transverse small elliptical, marginal, anal opening, with its lower edge level with the base of the test. Tubercles larger below than above, well sunken, and surrounded by rings of milliaries, which also fill up the intervening space. By the side of the milliaries on the lower surface there are many minute pyriform pores. Scrobicular circles of actinal surface wide and deep. I. and A. areas about equal in width. Petals *not closed*, but gradually diverging to very near the ambitus. Porif. zones gradually enlarging from apical system, being a single row on each side, connected by an oblique groove, and sometimes connected from apex to ambitus by a distinct groove; also a zigzag groove from apex to edge on both I. and A. areas. Actinosome deeply and abruptly sunken. Apical system slightly anterior, small, pentagonal, G. pores at the angles, O. pores between macdreporic body, occupying the central space, and rather scattered in its perforations. Spines small, like *Echinus;*

milled ring prominent, grooves large. Maj. diam, 140; min., 115; alt., 63; actinosome 25, but very irregular in shape. Largest spines scarcely 10 mil. in length.

Sub-Family LAGANIDÆ, Desor, 1857.

Outline pentagonal, petals crenulate, connection between floors by walls running parallel to the edge of test. I. extremity narrow on actinal side, ambulacral furrows straight.

Genus I.—LAGANUM, Klein, 1734.

Test generally large, sub-pentagonal, depressed, with swollen edge. Petals short, closed. Pores congregated. Actinal surface flat, with peristomal star, and porous ambulacra not reaching the margin. Primary tubercles few, and uniformly scattered, milliaries more numerous, anus inframarginal.

LAGANUM BONAMI, Klein.

A small sub-pentagonal species, with somewhat long petals, which are not quite closed. Anus and mouth not far apart, the latter large and pentagonal. Length, 33; breadth, 28 millim. Rather common in Port Jackson and in Tasmania.

LAGANUM DEPRESSUM. Lesson.

More flattened and larger than the last; edge thinner, not swollen, anus nearer edge, and transversely elliptical or circular; apical system larger. Peristomal star distinct, while on the last species it cannot be traced. The pairs of pores become more separated as they near the tip of petals, but never so indistinctly conjugated as in *L. Bonami*. Length, from 27 to 79; breadth, from 23 to 70 mil. It is found in the Pacific and Indian Oceans as well as Australia.

Genus, PERONELLA, Gray, 1855.

Regarded as a subgenus only by Agassiz. The Genital pore far away from the abactinal system in the I. Partitions ramify, extending half-way to the centre instead of forming a narrow belt of three or four near the edge. Four G. openings.

PERONELLA DECAGONALIS. Lesson.

Test large and graceful, much flattened, edges scarcely swollen, central part rising abruptly, but slightly from end of petals; shape, regularly decagonal. Petals narrow, porif. furrows closely packed; zones converging slightly towards extremity, and not rounded along sides of petals. Actinal surface flat. Actinosome round, central, with furrows extending nearly to the edge; anus elliptical near edge, but oblique to the longitudinal axis. Tuberculation uniform on both surfaces, but larger on lower. Color variable, but red when living. Port Jackson and along the east coast. Long diam. from 50 to 120 mil.

PERONELLA ORBICULARIS.—Much smaller than the last; more rounded with shorter petals, and more swollen edge. Supposed by Agassiz to be the young of *P. decagonalis*. Diam., 26. Same localities.

PERONELLA PERONII, Agass. Four G. openings in A. spaces a considerable distance from apex. Outline circular, edge swollen slightly, petals broadly lanceolate; mouth transversely elliptical. A. furrows indistinct, short. Long, 26. Tasmania, Jervis and Twofold Bays, Port Jackson, Broken Bay.

Family SCUTELLIDÆ. Agassiz, 1841.

Extremely flat, circular urchins, perforated or cut at the margin. A. furrows spreading, branching, and anastamosing. Partitions radiating from single points. Tubercles of upper and lower surface differing greatly in size.

ECHINARACHNIUS PARMA. Lamarck.

A common rounded form, with indentations on the edge, which is found almost all over the world. Common on the east coast. Many specimens collected by the "Chevert" Expedition within the tropics. It is also common at Guichen Bay on the S. coast and along the coasts of Victoria.

Genus 2.—ARACHNOIDES, Klein, 1734.

Circular urchins depressed, but conical. Ambulacral furrows, simple. Partitions of interior by pillars, numerous, slender,

radiating or branched, generally parallel to the outer edge, and extending two-thirds towards centre. *Tubercles of both surfaces arranged in oblique lines* across the plates. There is only one species.

ARACHNOIDES PLACENTA. Linnæus. Found at Cape Grenville and Darnley Island, by the "Chevert." It is also known in New Zealand, and is very common on sandy shores, within the tropics of E. Australia, where it is found lightly covered with sand at low water.

Sub-Order 3.—PETALOSTICHA, Hæckel, 1866.

Generally heart-shaped urchins without teeth. Ambulacral system petaloid. Anal and apical system disconnected. In this order we have certain narrow bands of fine milliaries which we called *Fascioles*, which are visible as depressed lines when the urchin is covered with spines, and which latter are of greatly disproportionate size. The large bristle-like curved spines are seated on the larger tubercles. The smaller ones frequently make a coat-like fur. The fascioles are covered with small embryonic spines which act as a sieve, and serve to keep particles of dirt from the pores. They are either round the petals, (peripetalous) anal, (round the anus) *internal* running along the grooved side of the test which corresponds to the odd ambulacrum, and between the end of the posterior petals and the apical system, or *lateral* Petalosticha are further distinguished by the formation of *Plastrons:* that is, a closely packed tubercular area of defined outline between the mouth and the anus. Pores round the mouth connected by furrows forming elegant designs, to which the name of *phyllodes* is given. These phyllodes are separated by clusters or nobs of tubercles in the A. spaces called *Bourrelets;* the phyllodes and bourrelets form the *Floscelle.*

The first family is Cassidulidæ, which does not seem to be represented in Australia. It is limited to species without plastrons or fascioles. There is one species of *Echinobrissus* in New Zealand.

Family SPATANGIDÆ. Agassiz, 1836.

Urchins with plastrons limited by bare ambulacral avenues. The posterior ambulacra, frequently divided by a fasciole, with a sub-anal plaston. Other fascioles variously present.

Genus 1.—MARETIA, Gray, 1855.

Test thin, flattened, large tubercles upon the I. areas, except the odd one. Actinal plastron *smooth*, without spines. Only an indistinct anal fasciole. Petals long, spreading, anterior groove indistinct. Only one living species known.

MARETIA PLANULATA, Leske, which was found by the "Chevert" Expedition at Cape Grenville and Darnley Island. I have also seen specimens from New Caledonia; and it is rather common in Port Jackson. The Australian species are smaller and of light straw color, the spines much longer, and more prominent than the New Caledonian species.

Genus 2.—EUPATAGUS, Agassiz, 1847.

Test thin, depressed, elliptical, petals arched, not sunk. I. areas covered by large tubercles, crenulate, and perforate, circumscribed by an elliptical peripetalous fasciole, a sub-anal fasciole present, no anterior groove, and no tubercles in odd I. space.

EUPATAGUS VALENCIENNESII, Agas. The only living species known, and which is found occasionally on the E. coast in deep water. I have seen a specimen from Bass' Straits, and the "Chevert" Expedition obtained it at Cape Grenville.

Genus 3.—LOVENIA, Desor, 1847.

Ambulacral petals somewhat triangular, adjoining zones forming crescents on each side of apex. Large tubercles, with deep scrobicular circle on upper side, but not on posterior I. space. Internal and sub-anal fascioles. There is only one living species in Australia.

LOVENIA ELONGATA, Gray, 1854. Distinguished by the deep funnel-shaped cavity, in which anal opening is placed. Tropical Australia, but sometimes found at Port Jackson.

Genus 4.—Breynia, Desor, 1847.

Test thick, remarkable for three fascioles, peripetalous, anal and internal, only associated in this genus. Large tubercles deeply sunken, enclosed within the peripetalous fasciole.

Breynia australasiæ, Leach.

A large urchin, from 60 to 75 mil. in diam, the test a deep chocolate colour, and clothed with a brownish fur of spines, on which the fascioles are very distinct. Found from Cape York to Port Jackson, and sometimes 80 millim. in length.

Genus 5.—Echinocardium, Gray, 1825.

Test thin, swollen, petals triangular, with internal fasciole, anterior groove distinct, and with small pores. Anus in a truncated posterior extremity. Sub-anal fasciole with ascending branches round anal system. Actinal spines long and spathulate, the others fine and silky.

Echinocardium australe, Gray.

A somewhat high test, with central apex, mouse-colored or brown. Common in S. E. Australia as far as Port Stephens, and in all Tasmania, Bass' Straits, S. Australia, as far as W. Australia. Found in 15 to 20 fathoms, on sandy mud.

Genus 6.—Brissopsis, Agassiz, 1840.

Brissopsis luzonica. A small urchin, with short confluent ambulacra, which form conspicuous long crescents, and a peripetalous and sub-anal fasciole. Very thin. I do not enter into the details of the genus, as its Australian habitat is entirely doubted by me. Still it has been reported as from tropical Eastern Australia.

Genus 7.—Metalia, Gray, 1855.

Test with a more or less broad elliptical undulating or re-entering peripetalous fasciole, and an anterior A. groove. Lateral A. petals narrow, elongate, pores well separated, apex anterior, actinal plastron narrow, heart-shaped, sub-anal area with a broad

fasciole and anal branches, sub-anal A. pores sending radiating grooves through the centre of sub-anal area; actinosome anterior crescentic. Tuberculation within peripetalous fasciole coarse, frequently consisting of primary tubercles.

METALIA MACULOSA.

Smaller than the following species, depressed, elliptical, indented at anterior edge, truncated posteriorly, *vertex posterior*. Greatest breadth across posterior petals, apical system more central, narrow ambulacral petals, a shallow anterior groove which is almost flush with test, except at the ambitus. Long., 43 to 78. Lat., 36 to 63. Alt., 21 to 34.

Rare at Port Jackson, and occasionally on the S. East coast.

METALIA STERNALIS. Lamouroux.

This large solid, swollen urchin, which is found in so many collections (generally bleached), is of dark brown color, with anterior apex, a broad zigzag peripetalous, and heart-shaped sub-anal fasciole. The sub-anal plastron is distinguished by a fan-shaped series of grooves, which converge from the fasciole. Anterior petals form an acute angle with anterior groove. It is sometimes met with, measuring 150 mil. in diam. Found throughout the Pacific, and tropical Eastern Australia, the latter rarely.

Genus 8.—LINTHIA, Gray, 1851.

Fascioles peripetalous and lateral, the first angular; the other extending under the anal system. Anterior groove, shallow, and broad; *anterior petals* at *right angles to the odd ambulacrum*; posterior narrow, long, and sunken.

LINTHIA AUSTRALIS, Gray.

Test thin, elliptical, angular, anterior groove descending to the ambitus, posterior end tuberculated, apical system anterior, vertex central. Long., from 38 to 61. Lat., 33 to 50, 25 to 39 mil. Common at times in South Australia and Tasmania. On one occasion, thousands of them were thrown on the beach at

Portland Bay, Western Victoria, after a slight storm. I have often seen it on the N. S. Wales coast, and it has been dredged in Bass' Straits at 30 fathoms. There is a specimen in the Sydney Museum which measures 150 mil. in length.

NOTE.—Just as the foregoing sheets were being printed, I have been enabled to compare my new species of *Evechinus (E. australiæ,)* with a good series of the New Zealand *E. chloroticus*. The differences are that my species are smaller, higher, hexagonal, the secondary tubercles in the I. spaces fewer, the spaces themselves becoming bare near the abactinal region. The outer and inner pairs of pores are a vertical series. I must, however, candidly admit that as far as my experience goes, the aforesaid differences *may be* a young stage of *E. chlorotious*. In any case I may add that specimens recently seen enable me to claim an Australian habitat for the latter.

ULAR LIST of all the AUSTRALIAN BIRDS at present known—showing the distribution of the Species,

By E. P. RAMSAY, F.L.S., &c.

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. Rr. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
CIRCUS ASSIMILIS, *J. & Selb.*... ...	27	...	...	...	...	*	*	*	*	*	*	*	...	...	...
,, GOULDII, *Bp.*	26	...	...	...	*	*	*	*	*	*	*	*	*	...	...
ASTUR CINEREUS, *Vieill*	14	...	...	*	*	*	*	*	*	...	*	*	...	...	...
,, NOVÆ-HOLLANDIÆ, *Gm.*	15	...	...	...	...	*	*	*	*	...	*	*	*	...	...
,, ,, *subsp.* LEUCOSOMUS, *Sharpe.*	*a*	...	...	*	...	...	...	...	...	...	...	...	...	...	*
,, APPROXIMANS, *V. & H.* ...	17	...	...	*	*	*	*	*	*	...	*	*	*	*	...
,, CRUENTUS, *Gould.*	18	...	...	...	...	...	...	...	...	...	...	...	...	*	...
,, *(Erythrotriorchis)* RADIATUS, *Lath.*	16	...	...	...	...	...	*	*	*	*	...	...	...	...	...
ACCIPITER CIRRHOCEPHALUS, *Vieill...* *A. torquatus*	19	...	...	*	*	*	*	*	*	*	*	*	*	*	...
AQUILA *(Uroaetus)* AUDAX, *Lath.* ...	1	...	*	*	*	*	*	*	*	*	*	*	*	*	...
,, *(Nisaetus)* MORPHNOIDES, *Gould.*	2	...	...	...	...	*	*	*	*	*	...	...	...	*	...
HALIAETUS LEUCOGASTER, *Gm.* ...	3	*	*	*	*	*	*	*	*	*	*	*	...	*	*
HALIASTUR INDUS, *Vieill.* *subsp.* GIRRENERA	4	*	*	*	*	*	*	*	*	...	...	...	...	...	*
,, SPHENURUS, *Vieill.* ...	5	*	*	*	*	*	*	*	*	*	*	*	...	*	*
MILVUS AFFINIS, *Gould.*	21	...	...	*	*	*	*	*	*	*	*	*	...	*	*?
LOPHOICTINIA ISURA, *Gould*	22	...	...	...	...	...	*	*	*	*	*	*	...	*	...
GYPOICTINIA MELANOSTERNON, *Gould.*	20	..	...	...	...	...	...	...	*	*	...	*	...	*	...
ELANUS AXILLARIS, *Lath.*	23	...	*	*	*	*	*	*	*	*	*	*	...	*	...
,, SCRIPTUS, *Gould.*	24	...	...	...	...	...	*	*	*	*	*	*	...	...	...
BAZA SUBCRISTATA, *Gould.*	25	*	...	*	*	*	*	*	*	...	...	...	...	...	...
FALCO MELANOGENYS, *Gould.*... ...	8	...	...	...	...	*	*	*	*	*	*	*	*	*	...
,, HYPOLEUCUS, *Gould*	7	...	*	...	...	...	*	...	...	*	...	...	...	*	...
,, SUBNIGER, *Gould.*	9	...	...	...	...	...	*	...	*	*	...	*	...	...	...
,, LUNULATUS, *Lath.*	10	...	*	*	*	*	*	*	*	*	*	*	*	*	...
HIERACIDEA BERIGORA, *V. & H.* ... *H. occidentalis, Gould*	12	...	...	...	...	...	...	...	...	*	*	*	...	*	...
,, ORIENTALIS, *Schl.* ... *H. berigora, Gray*	11	*	*	*	*	*	*	*	*	*	*	*	*	*	...
TINNUNCULUS CENCHROIDES, *V. & H*...	13	...	...	...	...	*	*	...	*	*	*	*	...	...	...

a—Sharpe's Cat., Acc. I., p. 119.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES	Species No. in Gould's Handbook to Birds of Australia or other References	Pt. Dar. & Pt. Essington	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. Rs. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.
27	PANDION LEUCOCEPHALUS, *Gould* ...	6	*	*	*	*	*	*	*	*	...	*	*
28	STRIX NOVÆ-HOLLANDIÆ, *Steph.* ...	29	*	*	...	*	*	*	*	*	*	*	*
28*a*	,, ,, *subsp.* CASTANOPS	28	...	...	...	...	...	...	...	*	...	*	*
29	,, TENEBRICOSA, *Gould.*	30	...	...	...	*	...	*	*	*	...	*	...
30	,, CANDIDA, *Tickell.* ...	Supp. pl. 1.	...	...	...	...	...	*	...	*	...	...	...
31	,, FLAMMEA, *L. subsp.* DELICATULA	31	...	*	*	*	*	*	*	*	*	*	*
32	NINOX BOOBOOK, *Lath.*	36	*	...	*	*	*	*	*	*	...	*	*
32*a*	,, *var.* MARMORATUS, *Gould.*	35	...	...	...	...	...	...	...	...	...	...	*
33	,, OCELLATA, *Homb. et Jacq.* ...	a	*	...	...	...	...	...	...	...	*	...	...
34	,, MACULATA, *Vig. & Horsf.*	37	...	...	...	...	...	*	...	*	...	*	*
35	,, CONNIVENS, *Lath.*	34	...	*	*	*	*	*	*	*	...	*	*
36	,, STRENUA, *Gould.*	32	*	...	*	...	...	*	*	*	...	*	*
36*a*	,, RUFA, *Gould. (juv. of preceding?)*	33	*	...	*	...	...	...	...	...	...	...	...
37	ÆGOTHELES NOVÆ-HOLLANDIÆ ...	38	...	...	...	*	...	*	*	*	...	*	*
38	,, LEUCOGASTER, *Gould.* ...	39	...	...	...	?*	...	...	...	...	...	...	...
39	PODARGUS STRIGOIDES, *Lath.* ...	40	...	...	...	...	*	*	*	*	...	*	...
40	,, CUVIERI, *Vig. & Horsf.* ...	41	...	...	...	...	...	...	...	...	...	...	*
41	,, PHALÆNOIDES, *Gould*	44	*	*	*	...	...	...	...	...	...	...	...
42	,, GOULDII, *Masters,* ...	b	*	*	...	...	...	...	...	...	...	...	...
43	,, PLUMIFERUS, *Gould.* ...	46	...	...	...	...	...	*	*	*	...	...	...
44	,, MARMORATUS, *Gould.* ...	47	...	...	*	...	...	*	...	...	...	...	...
45	,, PAPUENSIS, *Q. et Gaim.* ...	45	...	...	*	*	...	...	...	...	...	...	...
46	,, BRACHYPTERUS, *Gould.*	43	...	...	...	...	...	...	...	...	...	...	...
47	,, MEGACEPHALUS, *Lath.* ...*	42	...	...	...	...	...	*	...	*	...	*	...
48	EUROSTOPODUS GUTTATUS, *Vig.& Horsf*	49	*	*	*	*	*	*	*	*	*	*	*
49	,, ALBOGULARIS, *Vig. & Horsf.*	48	...	...	...	...	...	*	*	*	*	*	*
50	CAPRIMULGUS MACROURUS, *Horsf.* ...	50	*	*	*	*	*	...	...	...	...	...	...
51	CHÆTURA CAUDACUTA, *Lath.* ...	51	...	...	*	*	*	*	*	*	*	*	*
52	CYPSELUS PACIFICUS, *Lath.*	52	...	...	...	...	...	*	...	*	*	*	...
53	COLLOCALIA TERRÆ-REGINÆ, *Ramsay.*	c	...	...	?	*	*	...	...	...	...	...	...

a—*Homb. et Jacq.*—Voyage au Pôle Sud., Zool. Ill., p. 51, pl. 3, fig. 2. b—P. L. S. of N.S.W. *p. 45.* c—*P. Z. S., 1874,* p. 601. * I have never seen this doubtful species.

List of Australian Birds,
(Continued.)

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
HIRUNDO FRONTALIS, *Q. et Gaim.* ...	53	...	•	•	•	•	•	•	•	•	•	•	•	•	...
,, FRETENSIS, *Gould.*	54	...	...	•	...	...	...	...	...	...	...	...	...	...	•
HYLOCHELIDON NIGRICANS *Vieill.* ...	55	...	•	•	•	•	•	•	•	•	•	•	•	•	•
LAGENOPLASTES ARIEL, *Gould.* ...	56	...	...	...	...	•	•	•	•	•	•	•	...	...	...
CHERAMŒCA LEUCOSTERNON, *Gould.*...	57	...	...	..	...	...	...	...	•	•	•	•	...	•	...
MEROPS ORNATUS, *Latham.*	58	•	•	•	•	•	•	•	•	•	•	•	...	•	•
EURYSTOMUS PACIFICUS, *Lath.* ...	59	...	...	•	•	•	•	•	•	...	•	...	...	...	•
DACELO GIGAS, *Bodd.*	60	...	...	...	...	...	•	•	•	...	•	•	...	...	...
,, CERVINA, *Gould.*	62	•	•	•	...	...	...	...	...	...	...	...	...	...	...
,, OCCIDENTALIS, *Gould.* ...	a	•	...	...	...	...	...	...	...	...	...	...	...	...	...
,, LEACHII, *Vig. & Horsf.* ...	61	•	•	•	•	•	•	...	...	...	...	...	...	...	• †
HALCYON SANCTUS, *Vig. & Horsf.* ...	63	•	•	•	•	•	•	•	•	•	•	•	...	•	•
,, PYRRHOPYGIUS, *Gould.* ...	64	•	•	•	•	•	•	...	•	•	•	•	...	...	...
,, SORDIDUS, *Gould.*	65	•	•	•	•	•	•	...	...	...	...	...	...	...	•
,, MACLEAYI, *Jard & Selb.* ...	66	•	•	•	•	•	•	•	•	...	...	...	...	...	○
SYMA FLAVIROSTRIS, *Gould.*	67	•	...	•	...	...	...	...	...	...	...	...	...	...	• +
TANYSIPTERA SYLVIA, *Gould.*... ...	68	...	...	•	•	•	...	...	...	...	...	...	...	...	•
ALCYONE AZUREA, *Lath.*	69	...	...	...	•	•	•	•	•	...	•	•	...	...	...
,, DIEMENENSIS, *Gould.* ...	70	...	...	...	...	...	...	...	...	...	...	...	•	...	...
,, PULCHRA, *Gould.*	71	•	•	•	...	...	...	...	...	...	...	...	...	...	...
,, PUSILLA, *Temm.*	72	...	...	•	•	...	...	...	...	...	...	...	...	...	•
ARTAMUS, SORDIDUS, *Lath.*	73	...	...	...	•	•	•	•	•	•	•	•	•	...	...
,, LEUCOPYGIALIS, *Gould.* ...	80	•	•	•	•	•	•	•	•	...	•	•	...	...	•
,, PERSONATUS, *Gould.* ...	78	...	...	...	...	...	•	•	•	•	•	•	...	•	...
,, CINEREUS, *Vieillot.*	75	•	...	...	...	...	...	...	...	...	...	...	...	•	...
,, ALBIVENTRIS, *Gould.* ...	76	...	•	...	•	•	•	...	...	...	...	...	...	...	...
,, MELANOPS, *Gould.*	77	...	...	...	...	...	...	...	...	•	•	•	...	...	...
,, MINOR, *Vieillot.*	74	•	•	...	•	•	•	•	•	...	...	...	...	...	...
,, SUPERCILIOSUS, *Gould.* ...	79	...	...	...	...	...	•	•	•	•	•	•	...	...	...
PARDALOTUS PUNCTATUS, *Temm.* ...	81	...	...	...	•	•	•	•	•	•	•	•	•	•	...

a—P. Z. S., 1869, p. 602. † D. intermedius of Salvadori. ‡ S. torotoro, *Less.*

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species Nos. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Essington.	Pt. Fair. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.
83	PARDALOTUS XANTHOPYGIUS, *McCoy.*	a	...	...	...	...	...	...	...	...	...	•	•	•	...	•
84	,, STRIATUS, *Temm.* ...	84	...	...	...	...	...	•	...	...	•	•	•	•	...	•
85	,, AFFINIS, *Gould.* ...	85	...	...	...	...	...	...	...	...	•	...	•	•	•	...
85a	,, ASSIMILIS, *Ramsay.* ...	b	...	...	...	...	...	•	•	•	•	•	...	...	...	...
86	,, MELANOCEPHALUS, *Gould*	86	...	...	...	...	•	•	•	•	•	•	...	...	...	...
87	,, UROPYGIALIS, *Gould* ...	87	•	•	...	...	...	...	...	...	...	...	...	...	...	...
88	,, RUBRICATUS, *Gould.* ...	82	•	•	...	...	...	...	...	...	•	•	...	...	...	...
89	,, QUADRAGINTUS, *Gould.*	83	...	...	...	...	...	...	...	...	...	...	...	...	•	...
90	STREPERA GRACULINA, *White* ...	88	...	...	...	...	•	•	•	•	•	•	•	...	...	...
91	,, ANAPHONENSIS, *Temm.* ...	91	...	...	...	...	•	•	•	•	•	•	•	•	...	•
92	,, FULIGINOSA, *Gould.* ...	89	...	...	...	...	...	...	...	...	...	...	•	•	•	...
93	,, ARGUTA, *Gould.*	90	...	...	...	...	...	...	...	...	...	...	•	•	•	...
94	GYMNORHINA TIBICEN, *Lath.* ...	92	...	...	...	•	•	•	•	•	•	•	•	•	...	•
95	,, LEUCONOTA, *Gould.* ...	93	...	...	...	...	...	...	...	•	...	•	•	...	...	...
96	,, ORGANICUM, *Gould.* ...	94	...	...	...	...	...	...	...	...	...	...	...	...	•	...
97	CRACTICUS TORQUATUS, *Lath.*... ... *Barita destructor*, Temm.	99	...	...	...	•	•	•	•	•	...	•	•	...	...	...
98	,, PICATUS, *Gould.*	96	•	•	...	...	...	...	...	...	...	...	...	...	...	...
99	,, ROBUSTUS, *Lath.*, ... *C. nigrogularis*, Gould.	95	...	•	...	•	•	•	•	•	•	•	•	...	...	...
100	,, LEUCOPTERUS, *Cab.*... ...	101	...	...	...	...	...	...	...	...	...	...	...	...	...	•
101	,, QUOYII, *Lesson.*	98	•	•	•	•	...	...	...	...	...	...	...	...	...	...
102	,, CINEREUS. *Gould.*	100	...	...	...	...	...	...	...	...	...	...	•	•	...	...
103	,, ARGENTEUS, *Gould.*... ...	97	•	•	...	...	...	...	...	...	...	...	...	...	...	...
104	GRALLINA PICATA, *Lath.*	102	•	•	•	•	•	•	•	•	•	•	•	•	...	•
105	GRAUCALUS MELANOPS, *Lath.* ...	103	•	•	•	•	•	•	•	•	•	•	•	•	...	•
106	,, MENTALIS, *Vig. & Horsf.*	105	...	...	...	•	•	•	•	•	...	•	...	...	...	...
107	,, PARVIROSTRIS, *Gould.* ...	104	...	...	...	...	...	...	...	...	...	...	...	...	•	...
108	,, HYPOLEUCUS, *Gould.* ...	106	•	•	•	•	•	...	...	...	...	...	...	...	...	...
109	,, LINEATUS, *Swains.* ... *G. swainsonii*, Gould.	107	...	...	...	•	•	•	•	•	...	...	...	...	...	...

a—Gould, B. Aust., Suppl. pl. 8.
b—Tips of spurious wings *always orange-red* never *yellow* as in *P. affinis.*

List of Australian Birds,
(Continued.)

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Lar. & Pt. Essing	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
PTEROPODOCYS PHASIANELLA, *Gould.*	108	...	...	...	...	...	*	...	*	*	*	...	...	*	...
AMPEPHAGA JARDINII, *Rüpp.* ...	109	*	*	*	*	*	*	*	*	...	...	...	...	...	*
AMPEPHAGA RUFIVENTRIS, *Pucher*.... *C. Kara*, Gould, *nec.* Lesson.	110	*	*	*	*	*	*	*	*	...	...	...	...	...	*
,, LEUCOMELA, *V. & Horsf.* ...	111†	...	...	...	...	...	*	...	*	...	...	...	...	...	...
,, HUMERALIS, *Gould.*	112	*	*	*	*	*	*	*	*		*	*	...	...	*
,, KARU, *Lesson.*	a	...	...	*	...	...	...	...	...	...	...	...	...	...	*
ACHYCEPHALA GUTTURALIS, *Lath.* ...	113	...	...	...	*	*	*	*	*	...	*	*	...	...	...
,, OCCIDENTALIS, *Ramsay* ...	c	...	...	...	...	...	...	...	...	...	...	...	...	*	...
,, GLAUCURA, *Gould.* ...	114	...	...	...	...	...	...	...	...	...	...	...	*	...	...
,, MELANURA, *Gould.* ...	115	*	*	*	...	...	...	...	...	...	...	...	...	...	*
,, RUFIVENTRIS, *Lath.* ...	116	...	*?	*	*	*	*	*	*	...	*	*	...	...	...
,, PALLIDA, *Ramsay.*	b	...	*	..	*	...	...	...	...	...	...	...	..	...	...
,, FALCATA, *Gould.*	117	*	...	...	...	...	...	...	...	...	...	...	...	...	...
,, LANOIDES, *Gould.*	118	..	...	...	...	...	...	...	...	...	...	...	...	++	...
,, RUFOGULARIS, *Gould.* ...	119	...	...	...	...	...	...	...	...	*	*	*	...	...	...
,, GILBERTII, *Gould.*	120	...	...	...	...	...	...	...	...	...	...	*	...	*	...
,, SIMPLEX *Gould.*	121	*	...	...	...	...	...	...	...	...	...	...	...	...	...
,, OLIVACEA, *Vig. & Horsf.* ...	122	...	...	...	...	...	...	...	*	...	*	*	*	...	...
,, ROBUSTA, *Masters.*... ...	d	...	...	*	...	...	...	...	...	...	...	...	...	...	...
OLLURICINCLA HARMONICA, *Lath.* ...	123	...	...	...	*?	*	*	*	*	...	*	*	...	...	...
,, PARVULA, *Gould.*	127	*	...	...	...	...	...	...	...	...	...	...	...	...	...
,, BRUNNEA, *Gould.*	125	*	*	*	*?	...	...	...	...	...	...	...	...	...	*
,, SELBII, *Jardine*	126	...	...	...	...	...	...	...	...	...	...	...	*	...	...
,, RUFIVENTRIS, *Gould.* ...	124	...	...	...	...	...	...	...	...	...	...	...	...	*	...
,, RUFIGASTER, *Gould.* ...	128	...	...	...	...	...	*	*	*	...	...	...	...	...	...
,, PARVISSIMA, *Gould.* ...	e	...	*	*	*	...	...	...	...	...	...	...	...	...	...
,, SUPERCILIOSA, *Masters.* ...	f	...	...	§	...	...	...	...	...	...	...	...	...	...	...
ALCUNCULUS FRONTATUS, *Lath.* ...	129	...	...	...	..	...	*	*	*	*	*	*	...	...	...
,, LEUCOGASTER, *Gould.* ...	130	...	...	...	...	...	...	...	...	...	...	...	...	*	...

species should be perhaps, more correctly
a. *Rüpp.*
alities from Gould's Hand-book. I have
this species in any collection.
th West Coast, Gould.
Granville.

a—Voy. de la Coquille, pl. 12.
b—P. L. S. of N.S.W., Vol. II, pt. 3.
c—P. L. S. of N.S.W., Vol. II, pt. 2, p.
d—P. L.S. of N. S W., Vol. I, p. 49.
e—Ann. & Mag. Nat. Hist., Vol. X, p. 114.
f—P. L. S. of N.S.W., I, p. 50.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essington.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
139	Oreoica cristata, *Lewin*	131	...	•	...	•	•	•	•	•	•	•	•	...	...	...
140	Chibia bracteata, *Gould.*	132	•	•	•	•	•	•	•	•	...	...	...	...	...	•
141	Manucodia gouldii, *G. R. Gray* ...	133	...	...	•	...	...	...	...	...	...	...	...	...	...	•
142	Rhipidura albiscapa, *Gould.* ...	134	...	...	...	•	•	•	•	•	...	•	•	•	...	...
143	,, preissi, *Cab.*	135	...	...	...	...	...	...	...	...	...	...	...	...	•	...
144	,, rufifrons, *Lath.* ...	136	...	...	...	•?	•	•	•	•	...	•	...	...	...	...
145	,, dryas, *Gould.*	137	•	•	•	•?	...	...	...	...	...	...	...	...	...	...
146	,, setosa, *Quoy et Gaim.* ... *R. isura*, Gould, *R. superciliosa*, Ramsay	138	•	•	•	•	...	...	...	...	...	...	...	...	...	•
147	Saloprocta motacilloides, *Vig. & Horsf.*	139	...	...	...	•	•	•	•	•	•	•	•	...	•?	...
148	,, picata, *Gould.*	140	•	•	...	...	...	...	...	...	...	...	...	...	...	...
149	Seisura inquieta, *Lath.*	141	...	...	...	•	•	•	•	•	•	•	•	...	...	...
150	,, nana, *Gould.*	a	•	•	...	...	...	...	...	...	...	...	...	...	...	...
151	Piezorhynchus nitidus, *Gould.* ...	142	•	...	•	•	•	...	...	...	...	...	...	...	...	•
152	Arses *(Ophryzone)*, kaupii, *Gould.* ...	143	...	•	•	•	...	...	...	..	...	...	...	...	...	...
153	Myiagra plumbea, *Vig. & Horsf.* ...	144	...	...	...	•	•	•	•	•	...	•	...	...	...	•
154	,, concinna, *Gould.*	145	•	•	...	•	...	...	...	...	.	...	...	...	...	•
155	,, rubecula, *Lath.* ... ... *M. nitida*, *Gould.*	146	...	...	•	•	•	•	•	•	•	•	...	...	...	...
156	,, latirostris, *Gould* ...	147	•	•	...	...	...	...	...	...	...	...	...	...	...	...
157	Machærirhynchus flaviventer, *Gd.*	148	...	...	•	•	...	...	...	...	...	...	...	...	...	...
158	Micræca fascinans, *Lath.*	149	...	•?	...	•?	•	•	•	•	•	•	•	...	...	...
159	,, assimilis, *Gould.*	150	...	•	...	...	...	...	...	...	...	...	...	...	•	...
160	,, flavigaster, *Gould.* ...	151	•	•	•	•	...	...	...	...	...	...	...	...	...	•
161	Monarcha carinata, *Swainson.* ...	152	•	•	•	•	•	•	•	•	...	...	...	...	...	•
162	,, gouldii, *G. R. Gray.* ... *M. trivirgata*, Gould.	153	...	...	•	•	•	•	•	•	...	...	...	...	...	...
163	,, leucotis, *Gould.*	154	...	...	•	•	•	...	...	...	...	...	...	...	...	...
164	,, albiventris, *Gould*, ...	Supp. pl. 13.	...	•	•	•?	...	...	...	...	...	...	...	...	...	...
165	Gerygone albogularis, *Gould.* ...	155	...	...	•	•	•	•	•	•	...	...	...	...	...	...

a—Ann. and Mag., Nat. Hist. (4 Ser.) VI., p. 224.

List of Australian Birds,
(Continued.)

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
Gerygone fusca, *Gould.*	156	...	...	...	?	...	•	•	•	...	•	...	...	...	...
,, culicivora, *Gould.* ...	157	...	...	...	...	...	...	...	...	...	...	...	...	•	...
,, magnirostris, *Gould.* ...	158	•	...	...	•	...	...	...	...	...	...	...	...	...	•?
,, lævigaster, *Gould.* ...	159	•	•	...	?	...	...	...	...	...	...	...	...	...	...
,, chloronota, *Gould.* ...	160	•	...	...	...	...	...	...	...	...	...	...	...	...	...
,, personata, *Gould.* ...	Supp. pl. 14.	...	...	•	...	...	...	...	...	...	...	...	...	...	...
,, simplex, *Masters.* ...	a	•	•	...	...	...	...	...	...	...	...	...	...	...	...
,, flavida, *Ramsay.* ...	b	...	...	...	•	...	...	...	...	...	...	...	...	...	...
Smicrornis brevirostris, *Gould.* ...	161	...	...	...	...	...	•	•	•	•	•	•	...	•?	...
,, flavescens, *Gould.* ...	162	•	•	...	...	...	...	...	...	...	...	...	...	...	...
Erythrodryas rosea, *Gould.* ...	164	...	...	...	•	•	•	•	•	•	•	...	...	...	...
,, rhodinogaster, *Drap.*	163	...	...	...	...	...	...	...	...	...	•	•	•	...	...
Petroeca, multicolor, *Vig. & Horsf.*	165	...	...	...	•	•	•	•	•	•	•	•	•	...	...
,, goodenovii, *Vig. & Horsf.*	166	...	...	...	...	...	•	•	•	•	•	•	...	...	...
,, phœnicea, *Gould.*... ...	167	...	...	...	...	...	•	•	•	...	•	•	•	...	...
Melanodryas cucullata, *Lath.* ...	168	...	...	...	...	...	•	•	•	•	•	•	...	•	...
,, picata, *Gould.* ...	169	•	•	...	...	...	...	...	...	•	...	...	...	...	...
Amaurodryas vittata, *Quoy et Gaim.*	170	...	...	...	...	...	...	...	...	...	...	•	•	...	...
Pœcilodryas cerviniventris, *Gould*	171	...	...	...	...	...	...	...	...	...	...	...	...	†	...
,, superciliosa, *Gould.* ...	172	•	...	•	•	•	...	...	...	...	...	...	...	...	...
,, (?) cinerifrons, *Ramsay.*	c	...	...	...	•	...	...	...	...	...	...	...	...	...	...
Drymodes brunneopygia, *Gould.* ...	173	...	...	...	...	...	...	...	...	...	•	•	...	...	...
,, superciliaris, *Gould.* ...	174	...	•	•	...	...	...	...	...	...	...	...	...	...	...
Eopsaltria australis, *Lath.* ...	175	...	...	...	...	...	•	•	•	•	•	...	...	...	...
,, griseogularis, *Gould.* ...	176	...	...	...	...	...	...	...	...	...	...	•	...	•	...
,, gularis, *Quoy et Gaim.* ... *E. leucogaster*, Gould.	177	...	...	...	...	...	...	...	...	...	...	...	...	•	...
,, capito, *Gould.*	178	...	...	...	•	•	•	•	...	...	...	...	...	...	...
,, magnirostris, *Ramsay.*	d	...	...	...	•	•	•	...	...	...	...	...	...	...	...
,, inornata, *Ramsay.* ...	e	...	...	...	...	...	...	...	...	...	...	...	...	...	...

a—P. L. S. of N. S. W., 1. p. 52.
b—P. L. S. of N. S. W., Vol. 2, p. 53.
c—P. Z. S., 1875, p. 588.
d—*M. S. S.*, 1867; *et lit.*; *Gould, Ann. & Mag.* Nat. His., (4), IV, p. 109.
e—P. Z. S., 1874, p. 604. † North West Coast.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.
195	EOPSALTRIA LEUCURA, *Gould.* ...	Supp. pl. 18.	*	*	*	...	...	...	...	...	...	...	...	...
196	,, CHRYSORRHOUS, *Gould.* ...	a	...	...	...	*	*	*	...	...	...	...	...	...
197	MENURA SUPERBA, *Davies.*	179	...	...	...	...	...	...	...	*	...	...	...	...
198	,, ALBERTI, *Gould.*	181	...	...	...	...	...	*	*	...	...	...	...	...
199	,, VICTORIÆ, *Gould.*	180	...	...	...	...	...	...	...	...	...	*	*	...
200	PSOPHODES CREPITANS, *Vig & Horsf.* ...	182	...	...	...	*	*	*	*	*	...	*	...	...
201	,, NIGROGULARIS, *Gould.* ...	183	...	...	...	...	...	...	...	...	...	...	...	...
202	SPHENOSTOMA CRISTATA, *Gould.* ...	184	...	...	...	...	...	...	...	*	*	*	*	...
203	MALURUS CYANEUS, *Lath.*	185	...	...	...	...	*	*	*	*	*	*	*	...
204	,, LAMBERTI	191	...	*	...	*	...	*	*	*	*	*	*	...
205	,, LONGICAUDUS, *Gould.*	186	...	...	...	...	...	...	...	...	...	*	*	*
206	,, MELANOTUS, *Gould.*	187	...	...	...	...	...	...	...	...	*	*	*	...
207	,, SPLENDENS, *Quoy. et Gaim.* ...	188	...	...	...	...	...	...	...	...	...	...	...	...
208	,, ELEGANS, *Gould.*	189	...	...	...	...	...	...	...	...	...	...	...	...
209	,, PULCHERRIMUS, *Gould.* ...	190	...	...	...	...	...	...	...	...	...	...	...	...
210	,, AMABILIS, *Gould.*	192	...	*	*	*	...	...	...	...	...	...	...	...
	M. hypoleucus, Gould = ♀ of 210	Supp. pl. 22.												
211	CORONATUS, *Gould*	193	+											

[redacted]

List of Australian Birds,
(Continued.)

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Moreton & Clar. Rr. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
SPHENURA *subsp.* LONGIROSTRIS, *Gould.*	203													●	
,, BROADBENTII, *McCoy.*	Supp. 11 pl.										●	●			
ATRICHIA CLAMOSA, *Gould.*	204													●	
,, RUFESCENS, *Ramsay.* ...	a							●							
HYLACOLA CAUTA, *Gould.*	206											●			
,, PYRRHOPYGIA, *Vig. & Horsf.*	205						●	●	●		●	●			
PYCNOPTILUS FLOCCOSUS, *Gould.* ...	207										●				
CISTICOLA MAGNA, *Gould.*	208								●						
,, EXILIS, *Lath.*	209								●		●	●			
,, LINEOCAPILLA, *Gould.* ...	210	●											●		
,, RUFICEPS, *Gould.* ...	212														
C. isura, Gould, = ♀ *of C. ruficeps*	211		●	●	●	●	●	●	●		●	●			●
SERICORNIS CITREOGULARIS, *Gould.* ...	213				●	●	●	●	●						
,, HUMILIS, *Gould.*	214												●		
,, OSCULANS, *Gould.* ...	215										●	●			
,, FRONTALIS, *Vig. & Horsf.*	216						●	●	●	●	●	●			
,, LÆVIGASTER, *Gould.* ..	217	●	●												
,, MACULATUS, *Gould.* ...	218								●		●	●		●	
,, MAGNIROSTRIS, *Gould.* ...	219				●	●	●	●	●						
,, MINIMUS, *Gould.*	b		●	●	●										
ACANTHIZA PUSILLA, *Lath.*	220						●	●	●		●				
,, DIEMENENSIS, *Gould.* ...	221												●		
,, UROPYGIALIS, *Gould.* ...	222								●	●	●				
,, APICALIS, *Gould.* ...	223													●	
,, PYRRHOPYGIA, *Gould.* ...	224										●	●			
,, INORNATA, *Gould.* ...	225											●		●	
,, NANA, *Vig. & Horsf.* ...	226						●	●	●		●	●			
,, LINEATA, *Gould.*	227						●	●	●		●	●			
,, MAGNA, *Gould.*	228												●		
GEOBASILEUS REGULOIDES, *Vig. & Horsf.*	230						●	●	●	●	●	●			

Z. S., 1866, p. 433. b—Gould Bds. of New Guinea, pt. I, pl. 13, (Dec., 1875).

List of Australian Birds,
(Continued.)

	NAME OF SPECIES	Species No. in Gould's Handbook to Birds of Australia or other References	Pt. Dar. & Pt. Essington	Gulf of Carpentaria	Cape York	Rockingham Bay	Port Denison	Wide Bay District	Rich. & Clar. Rs. Dist.	N. S. Wales	Interior	Victoria	South Australia	Tasmania	West Australia	S. Coast N. Guinea
252	Geobasileus chrysorrhœa, *Q. et Gm.*	229	...	...	...	•	•	•	•	•	•	•	•	•	•	...
253	Ephthianura tricolor, *Gould.* ...	233	...	...	...	..	•	...	...	•	•	•	•	...	...	...
254	,, aurifrons, *Gould.* ...	232	...	...	...	...	...	...	...	•	•	•	•	...	...	...
255	,, albifrons, *Jard. & Selb.*	231	...	...	...	...	...	•	•	•	...	•	•	...	•	...
256	,, crocea, *Castl. & Ramsay.*	a	...	•	...	...	...	...	...	...	...	...	...	...	...	...
257	Xerophila leucopsis, *Gould.* ...	234	...	...	...	...	•	...	...	•	•	•	•	...	...	•
258	,, pectoralis, *Gould.* ...	b	...	...	...	...	•	...	...	...	...	...	•	...	...	...
259	Pyrrholæmus brunneus, *Gould.* ...	235	...	...	...	...	...	...	...	...	...	•	•	...	•	...
260	Origma rubricata, *Lath.*	236	...	...	...	...	...	•	...	•	...	...	...	...	...	...
261	Calamanthus fuliginosus, *Vig. & H.*	237	...	...	...	...	...	...	...	...	...	...	...	•	...	...
262	,, campestris	238	...	...	...	...	...	...	...	...	...	•	•	...	•	...
263	Chthonicola sagittata, *Lath.* ...	239	...	...	...	...	...	•	•	•	...	•	•	...	...	...
264	Anthus australis, *Vig. & Horsf.* ...	240	•	•	•	•	•	•	•	•	•	•	•	•	•	...
265	Cincloramphus cruralis, *Vig. & H.*	241	...	...	...	•	•	•	•	•	•	•	•	...	...	...
266	,, cantillans, *Gould.*	242	•	...	...	...	...	...	...	...	...	•	•	...	...	...
267	Ptenœdus rufescens, *Vig. & Horsf.*	243	•	•	•	•	•	•	•	•	•	•	•	...	•	...
268	Sphenæacus galactotes, *Temm.* ...	244	•	•	•	•	•	•	•	•	...	•	...	...	...	...
269	,, gramineus, *Gould.* ...	245	...	...	...	...	•	•	•	•	•	•	•	•	•	...
270	Calamoherpe australis, *Gould.* ...	246	...	...	...	•	•	•	•	•	•	•	•	...	...	...
271	,, longirostris, *Gould.* ...	247	...	...	...	...	...	...	...	...	...	...	...	...	•	...
272	Mirafra horsfieldii, *Gould.* ...	248	...	•	...	•	•	•	•	•	•	•	•	...	...	...
273	Estrilda *(Zonæginthus)* bella, *Lath.*	249	...	...	...	...	...	•	...	•	•	•	...	•	...	...
274	,, (,,) oculea, *Quoy et Gm.*	250	...	...	...	...	...	...	...	...	...	...	...	...	•	...
275	*(Stictoptera)* bichenovii, *Vig. & H.* ...	251	...	•	...	...	•	...	...	•	•	•	...	...	...	...
276	,, annulosa, *Gould.* ...	252	•	...	...	...	...	...	...	...	...	...	...	...	...	...
277	,, *(Ægintha)* temporalis, *Lath.*...	253	...	...	...	•	•	•	•	•	•	...	...	...	...	...
278	,, *(Bathilda)* ruficauda, *Gould.*...	254	•	•	...	...	•	...	...	•	•	...	...	...	...	...
279	,, *(Aidemosyne)* modesta, *Gould.*	255	...	...	...	...	...	•	...	•	•	•	...	...	...	...
280	,, *(Neochmia)* phaeton, *H. et Jacq.*	256	•	•	...	•	•	...	...	...	...	...	...	...	...	...
281	,, *(Stagonopleura)* guttata, *Shaw.*	257	...	...	...	...	...	•	•	•	•	•	•	...	...	...

a—P. Linn. Soc. N.S.W., p. IV., Vol. 1. b—Gould. Ann & Mag. Nat. Hist. (4), VIII, p. 192.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
2	ESTRILDA (*Tæniopygia*) CASTANOTIS, *Gd.*	258	*	*	...	...	...	...	...	*	*	*	*	...	*	...
3	MUNIA FLAVIPRYMNA, *Gould.* ...	267	*	*	...	...	...	...	...	...	...	...	...	...	...	...
4	DONACOLA CASTANEOTHORAX, *Gould.*...	265	...	*	*	*	*	*	*	*	...	...	...	...	...	...
5	,, PECTORALIS, *Gould.* ...	266	*	*	...	...	...	...	...	...	...	...	...	...	...	...
6	EMBLEMA PICTA, *Gould.*	268	†	...	...	...	...	...	...	...	...	...	...	...	...	...
7	POEPHILA CINCTA, *Gould,*	264	...	...	...	*	*	*	...	...	...	*	...	...	...	..
8	,, ACUTICAUDA, *Gould.* ...	261	*	...	...	...	...	...	...	...	...	...	...	...	...	...
9	,, ATROPYGIALIS, *Diggles.* ...		...	*	...	...	...	...	...	...	...	...	...	...	...	...
10	,, MIRABILIS, *Homb. et Jacq.*	260	*	*	...	...	...	...	...	...	...	...	...	...	...	...
11	*(black-headed phase)* GOULDIÆ, *Gould.*	259	*	*	...	...	...	...	...	...	...	...	...	...	...	...
12	*(yellow-headed phase)* ARMITIANA, *Rams.*	a	...	*	...	...	...	...	...	...	...	...	...	...	...	...
13	,, PERSONATA, *Gould.*... ...	262	*	*	...	...	...	...	...	...	...	...	...	...	...	...
14	,, LEUCOTIS, *Gould.*	263	*	*	...	...	...	...	...	...	...	...	...	...	...	...
15	PITTA STREPITANS, *Temm.*	269	...	...	...	*	*	*	*	*	...	...	...	...	...	...
16	,, *(subsp.)* SIMILIMA, *Gould.* ...	b	...	...	*	*	...	...	...	...	...	...	...	...	...	...
17	,, MACKLOTII, *Müll & Schleg.* ...	Supp. pl. 29.	...	...	*	...	...	...	...	...	...	...	...	...	...	*
18	,, IRIS, *Gould.*	270	*	...	...	...	...	...	...	...	...	...	...	...	...	...
19	CINCLOSOMA PUNCTATUM, *Lath.* ...	271	...	...	...	...	...	*	*	*	*	*	*	*	...	...
20	,, CASTANEONOTUM, *Gould.*...	272	...	...	...	...	...	...	...	*	*	*	*	...	*	...
21	,, CINNAMOMEUM, *Gould.* ...	273	...	...	...	...	...	...	...	...	*	*	*	...	...	...
22	,, CASTANEOTHORAX, *Gould.*	274	...	...	...	...	...	*	...	...	*	...	...	...	...	...
23	OREOCINCLA LUNULATA, *Lath.* ...	275	...	...	...	...	...	*	*	*	...	*	...	...	*	...
24	,, HEINII, *Cab.* ... ... *O. iodura*, Gould.	d	...	...	...	*	...	...	...	...	...	...	...	...	...	...
25	PTILONORHYNCHUS HOLOSERICEUS, ... *Kuhl. (P. violaceus, Vieill.)*	276	...	...	...	*	*	*	*	*	...	...	...	...	...	...
26	,, *(hybrid)* RAWNSLEYI, *Digg.*	e	...	...	...	...	...	*	...	...	...	...	...	...	...	...
27	AILURÆDUS CRASSIROSTRIS, *Payk.* ... *A. Smithii, Vig. & Horsf.*	277	...	...	...	...	...	*	*	*	...	...	...	...	...	...
28	,, MACULOSUS, *Ramsay.* ...	f	...	...	...	*	*	*	...	...	*	*	...	...	...	...

† *Hab.* North-West Coast, Gould.
a.—P. Linn. Soc. N. S Wales, Vol. 2, p. 70.
b.—P. Z. S., 1868, p. 76.
d.—Ann. Mag. Nat. Hist., 4 Ser., 9. p. 401.
e.—See P. S. Z., 1875, p. 69, Gould Suppl. pl. 34.
f.—P. Z. S. 1874, p. 601.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essington	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
309	CHLAMYDODERA NUCHALIS, *Jard. & Selb.*	278	•	•	•	•	•	...	...	...	...	...	...	...	...	...
310	,, MACULATA, *Gould.* ...	279	...	...	...	•	•	•	...	...	•	•	...	...	...	...
311	,, GUTTATA, *Gould.* ...	280	†	•?	...	...	...	...	...	...	...	...	...	...	...	...
312	,, CERVINIVENTRIS, *Gould*	281	...	...	•	...	...	...	...	...	...	...	...	...	...	•
313	,, OCCIPITALIS, *Gould.* ...	a	...	?	...	...	...	...	...	...	...	...	...	...	...	...
314	SCENOPÆUS DENTIROSTRIS, *Ramsay*....	b	...	...	...	•	...	...	...	...	...	...	...	...	...	...
315	SERICULUS MELINUS, *Lath.*	282	...	...	...	...	•?	•	•	•	...	...	...	...	...	...
316	MIMETA VIRIDIS, *Lath.*	283	•	...	...	...	...	•	•	•	...	•	...	...	...	...
317	,, AFFINIS, *Gould.*	284	•	•	•	•	...	...	...	...	...	...	...	...	...	...
318	,, FLAVOCINCTA, *King*.... ...	285	•	•	•	•	•	...	...	...	...	...	...	...	...	...
319	SPHECOTHERES MAXILLARIS, *Lath.* ...	286	...	•	...	•	•	•	•	•	...	...	...	...	...	...
320	,, FLAVIVENTRIS, *Gould*....	287	...	•	•	•	•	...	...	...	...	...	...	...	...	•
321	CORCORAX MELANORHAMPHUS, *Vieill.*	288	...	...	...	•	•	•	•	•	•	•	•	...	...	...
322	STRUTHIDEA CINEREA, *Gould.* ...	289	..	•	...	...	...	...	...	•	•	•	•	...	...	...
323	CORVUS AUSTRALIS, *Gmelin.*	290	•	•	•	•	•	•	•	•	•	•	•	•	•	...
324	CALORNIS METALLICA, *Temm.* ...	291	...	•	•	•	•	...	...	...	...	...	...	...	...	•
325	POMATOSTOMUS TEMPORALIS, *V. & H.*	292	...	•	...	•	•	•	•	•	•	•	•	...	...	...
326	,, SUPERCILIOSUS, *V. & H.*	294	•	•	...	•	•	•	...	•	•	•	•	...	•	...
327	,, RUBECULUS, *Gould.* ...	293	•	...	...	...	...	...	...	...	...	...	...	...	...	...
328	,, RUFICEPS, *Hartlaub.* ...	295	...	...	...	...	...	...	...	•	•	•	•	...	...	...
329	MELIORNIS NOVÆ-HOLLANDIÆ, *Lath.*	296	...	...	...	...	...	•	•	•	...	•	•	•	•?	...
330	,, *(subsp. a.)* LONGIROSTRIS, *Gould*	297	...	...	...	...	...	...	...	...	...	...	...	...	•	...
331	,, SERICEA, *Gould.* ...	298	...	...	...	...	...	•	•	•	...	•	...	...	•?	...
332	,, *(subsp. b.)* MYSTACALIS, *Gould.*	299	...	...	...	...	...	...	...	...	...	...	...	...	•	...
333	,, (*Lichmera*) AUSTRALASIANA, *Shaw*	300	...	...	...	...	...	•	•	•	...	•	•	•	...	...
334	GLYCIPHILA FULVIFRONS, *Lewin.* ...	301	...	...	...	...	...	•	•	•	...	•	•	•	...	...
335	,, ALBIFRONS	302	...	...	...	...	•?	...	...	•	•	•	•	...	•	...
336	,, ? PECTORALIS, *Gray.* ... / *(G. fasciata*, Gould.*)*	303	•	•	•	•	•	...	...	...	...	...	...	...	...	...
337	,, ? SUBFASCIATA, *Ramsay*, ...	c	...	...	•	•	...	...	...	...	...	...	...	...	...	...

† *Hab.* North West Australia, Gould.
a—Ann. Nat. Hist. (4), No. 96, p. 429.
b—P. Z. S. 1875, p. 591.
c—P. Z. S., 1868, p. 385.

List of Australian Birds,
(Continued.)

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
STIGMATOPS OCULARIS, *Gould.* ...	304	•	?	?	•	•	•	•	•						
,, SUBOCULARIS, *Gould.* ...	305	•	•	•	•										
PTILOTIS, LEWINII, *Swains.*	306				•	•	•	•	•		•				
,, VITTATA, *Cuv*	307		•		•	•	•		•		•	•		•	
,, VERSICOLOR, *Gould.* ...	308			•	•										•
,, FASIOGULARIS, *Gould.* ...	309				•	•	•								
,, FLAVICOLLIS, *Vieill.* *P. flavigula*, Gould. ...	310								•		•	•	•		
,, GRACILIS, *Gould.*	a		•	•											•
PTILOTIS LEUCOTIS, *Lath.*	311						•	•	•		•	•		•	
,, AURICOMIS, *Lath.*	312						•	•	•	•					
,, *(Lichenostomus)* CRATITIA, *Gould.*	313									•	•	•		•	
,, (,,) OCCIDENTALIS, *Cab.*														•	
,, ORNATA, *Gould.*	314										•	•		•	
,, PLUMULA, *Gould.*	315		?							•		•		•	
,, FLAVESCENS, *Gould.* ...	316	•	•												•
,, FLAVA, *Gould.*	317		•	•	•	•									
,, PENICILLATA, *Gould.* ...	318						•	•	•	•	•	•			
,, FUSCA, *Gould.*	319				•	•	•	•	•	•	•				
,, CHRYSOPS, *Lath.*	320				•	•	•	•	•						
,, FRENATA, *Ramsay*	b				•										
,, MACLEAYI, *Ramsay.* ...	c				•										
,, NOTATA, *Gould.*	Sup. pl. 41.				•	•									•
,, CASSIDIX, *Jard.*	pl. 39.									•	•	•			
,, COCKERELLI, *Gould.* ...	pl. 43.				•										
,, *(Xanthotis)* FILIGERA ...	321		•	•	•										•
STOMIOPERA UNICOLOR, *Gould.* ...	322	•	•												•
PLECTORHYNCHA LANCEOLATA, *Gould.*	323				•		•		•	•	•	•			
MELIPHAGA PHRYGIA, *Lath.*	224				•		•	•	•	•					
ENTOMOPHILA PICTA, *Gould.*	326								•	•					

—P. Z. S. 1866, p. 217.
—P. Z. S. 1874, p. 603.

c—P. Linn. Soc, N.S.W., Jan. 25th, 1875, Vol. I. p. 10; Syn. *P. flavontriata*, Gould, P.Z.S. April, 1875, p. 315.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essington.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast W. Guinea.
367	(*Conopophila*) ALBOGULARIS, *Gould.*	327	•	•	•	...	...	...	...	...	...	...	...	...	...	...
368	(,,) RUFOGULARIS, *Gould.*	328	•	•	•	...	...	...	...	...	...	...	...	...	...	...
369	CERTHIONYX LEUCOMELAS, *Cuv.* .. *Entomophila picata*, Gould.	325	...	...	...	...	...	...	...	•	•	...	•	...	•	...
370	ACANTHOGENYS RUFOGULARIS, *Gould.*	329	...	...	...	...	...	...	...	•	•	•	•	...	•	...
371	ANTHOCHÆRA INAURIS, *Gould.* ...	330	...	...	...	...	...	...	...	...	...	...	...	...	•	...
372	,, CARUNCULATA, *Lath.* ...	331	...	...	...	...	...	•	•	•	•	•	•	•	...	...
373	ANELLOBIA MELLIVORA, *Lath* ...	332	...	...	...	?	...	•	•	•	...	•	•	•	...	...
374	,, LUNULATA, *Gould.* ...	333	...	...	...	...	...	...	...	...	...	...	...	...	•	...
375	PHILEMON CORNICULATUS, *Lath.* ...	334	...	...	...	•	•	•	•	•	•	•	...	...	...	...
376	,, BUCEROIDES, *Swains* ...	335	...	•	•	•	...	...	...	...	...	...	...	...	...	...
377	,, ARGENTICEPS, *Gould.* ...	336	•	•	•	...	...	...	...	...	...	...	...	...	...	...
378	,, CITREOGULARIS, *Gould.* ...	337	...	•?	•	•	•	•	•	•	•	•	...	...	...	...
379	,, SORDIDUS, *Gould.*... ...	338	•	•	...	...	...	...	...	...	...	...	...	...	...	...
380	ACANTHORHYNCHUS TENUIROSTRIS, *Lth.*	339	...	...	...	...	...	•	•	•	...	•	•	•	...	...
381	,, SUPERCILIOSUS, *Gould.*	340	...	...	...	...	...	...	...	...	...	...	...	...	•	...
382	MYZOMELA SANGUINEOLENTA, *Lath...*	341	...	...	...	•	•	•	•	•	•	•	...	...	...	...
383	,, ERYTHROCEPHALA, *Gould.*	342	•	...	•	...	...	...	...	...	...	...	...	...	...	...
384	,, PECTORALIS, *Gould.* ...	343	•	•	•	•	...	...	...	...	...	...	...	...	...	...
385	,, NIGRA, *Gould.*	344	•	...	...	...	...	...	...	•	•	•	•	...	•	...
386	,, OBSCURA, *Gould.*... ...	345	•	•	•	•	•	•	...	...	...	...	...	...	...	...
387	ENTOMYZA CYANOTIS, *Swainson* ...	346	...	?	...	•	•	•	•	•	•	...	...	...	...	...
388	,, ALBIPENNIS, *Gould.* ...	346A	•	•	•?	...	...	...	...	...	...	...	...	...	...	...
389	MELITHREPTUS VALIDIROSTRIS, *Gould.*	347	...	...	...	...	...	...	...	...	...	...	...	•	...	...
390	,, BREVIROSTRIS, *V. & Hsf.*	a	...	...	...	•	•	•	•	•	...	...	...	...	...	...
391	,, GULARIS, *Gould.* ...	348	...	...	...	•	•	•	...	•	•	•	•	...	...	...
392	,, LUNULATUS, *Shaw.* ...	349	...	...	...	...	...	•	•	•	•	•	•	...	...	...
393	,, CHLOROPSIS, *Gould.* ...	350	...	...	...	...	...	...	...	...	...	...	...	...	•	...
394	,, ALBOGULARIS, *Gould.* ...	351	•	•	•	•	•	•	...	...	...	...	...	...	...	•
395	,, MELANOCEPHALUS, *Gould.*	352	...	...	...	...	...	...	...	...	...	...	...	•	...	...

a—Trans. Linn. Soc., XV, p. 315.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dist.	N. S. Wales.	Interior	Victoria	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
6	MELITHREPTUS LÆTIOR, *Gould.* ...	a	...	•	...	...	...	...	...	...	...	...	•‡	...	...	...
7	MYZANTHA GARRULA, *Lath.*... ...	353	...	...	...	...	...	•	•	•	•	•	•	•	...	...
8	,, OBSCURA, *Gould.*	354	...	...	...	...	...	...	...	...	...	...	...	•	...	...
9	,, LUTEA, *Gould.*	355	•	•	...	...	...	...	...	...	...	...	...	...	...	...
0	,, FLAVIGULA, *Gould.* ...	356	...	•	...	...	...	...	...	•	•	•	•	...	...	...
1	MANORHINA MELANOPHRYS, *Lath.* ...	357	...	...	...	...	...	•	•	•	...	•	...	...	...	...
2	DICÆUM HIRUNDINACEUM, *Shaw.* ...	358	•	•	•	•	•	•	•	•	•	•	•	•	...	•
3	CINNYRIS FRENATA, *Müll.* ... ... *(Nectarinia australis; Gould.)*	359	...	...	•	•	•	...	...	...	...	...	...	...	...	•
4	ZOSTEROPS CŒRULESCENS, *Lath.* ...	360	...	...	...	•	•	•	•	•	...	•	•	•	...	...
5	,, GOULDII, *Bp.*	361	...	...	...	...	...	...	...	...	...	...	...	...	•	...
6	,, LUTEUS, *Gould.*	362	•	•	•	...	...	...	...	...	...	...	...	...	...	...
7	,, RAMSAYI, *Masters* ...	b	...	...	...	•?	•?	...	...	...	...	...	...	...	...	...
8	,, FLAVOGULARIS, *Masters.*...	c	...	...	•†	•	...	...	...	...	...	...	...	...	...	...
9	,, GULLIVERI, *Castl. & Rams.*	d	...	•	...	...	...	...	...	...	...	...	...	...	...	...
0	PTILORIS PARADISEA, *Swains...* ...	363	...	...	...	...	...	•	•	•	...	...	...	...	...	...
1	,, VICTORIÆ, *Gould*	364	...	...	...	•	...	...	...	...	...	...	...	...	...	...
2	(CRASPEDOPHORA) ALBERTI, *Gray.* ... *(C. magnifica;* Gray.*)*	365	...	...	•	...	...	...	...	...	...	...	...	...	...	•
3	CLIMACTERIS SCANDENS, *Temm.* ...	366	...	...	...	•	•	•	•	•	•	•	•	...	...	...
4	,, RUFA, *Gould*	367	...	...	...	...	...	...	...	...	...	...	...	...	•	...
5	,, ERYTHROPS, *Gould* ...	368	...	...	...	...	...	•	•	•	•	...	...	...	...	...
6	,, MELANOTUS, *Gould* ...	369	•	•	...	...	...	...	...	...	...	...	...	...	...	...
7	,, MELANURA, *Gould* ...	370	•	•	...	...	...	...	...	...	...	...	...	...	...	...
8	,, LEUCOPHŒA, *Lath.* ...	371	...	...	...	...	•	•	•	•	•	•	•	...	...	...
9	,, PYRRHONOTA, *Gould* ...	e	...	...	...	...	...	...	...	•	•	...	...	...	...	...
0	ORTHONYX SPINICAUDUS, *Temm.* ...	372	...	...	...	...	...	•	•	•	...	•	...	...	...	...
1	,, SPALDINGI, *Ramsay.* ...	Supp. pl. 53.	...	...	...	•	...	...	...	...	...	...	...	...	...	...
2	SITTELLA CHRYSOPTERA, *Lath.* ...	373	...	...	...	...	•	•	•	•	•	•	•	...	...	...
3	,, (*var.*) TENUIROSTRIS, *Gould.* ...	f	...	...	...	...	...	...	...	...	•	...	...	...	...	...

a—Ann. & Mag. Nat. Hist., 4th Ser., Oct., 1875, p. 287.
b—P. L. S. of N. S. W., Vol. I., p. 56. *Hab.* Palm Island.
c—P. L. S., N. S. W., I., p. 56.
d—P. L. S., N. S. W., Vol. I, p. 383.
e—P. Z. S., 1867, p. 976.
f—*Gould Handbook* I, p. 610.
† *Hab.* Islands in Torres Straits.
‡ Hab. Lake Eyre.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
424	SITTELLA LEUCOCEPHALA, *Gould* ...	374	...	...	...	...	...	*	...	*	*	...	...	...	...	...
425	,, LEUCOPTERA, *Gould* ...	375	*	*	...	...	...	...	...	...	...	...	...	...	...	...
426	,, PILEATA, *Gould*	376	...	...	...	...	...	...	...	*	*	*	*	...	*	...
427	,, STRIATA, *Gould*	Supp. pl. 54.	...	*	*	*	...	...	...	...	...	...	...	...	...	...
428	,, ALBATA, *Ramsay*	a	...	...	...	*	*	...	...	...	...	...	...	...	...	...
429	CUCULUS CANOROIDES, *Müll.*... ... *(C. optatus,* Gould.*)*	377	...	...	*	*	*	*	...	...	...	...	...	...	...	...
430	CACOMANTIS PALLIDA, *Lath*	378	...	*	*	*	*	*	*	*	*	*	*	*	*	...
431	,, FLABELLIFORMIS, *Lath* ...	379	...	*	*	*	*	*	*	*	*	*	*	*	*	...
432	,, INSPERATUS, *Gould* ...	380	...	...	...	...	*	*	*	*	...	*	*	...	*	...
433	,, DUMETORUM, *Gould* ...	381	*	*	...	*	...	...	...	...	...	...	...	...	...	* †
434	,, CASTANEIVENTRIS, *Gould* ¼	Supp. pl. 55.	...	...	*	...	...	...	...	...	...	...	...	...	...	...
435	MESOCALIUS PALLIOLATUS, *Lath.* ... *(Chalcites osculans,* Gould.*)*	382	...	*	...	...	...	...	...	*	...	*	*	...	*	...
436	CHALCITES PLAGOSUS, *Lath.*	383	*	*	*	*	*	*	*	*	*	*	*	*	*	*
437	,, BASALIS, *Horsf.*	385	...	...	...	...	*	*	*	*	...	*	*	*	...	...
438	,, MINUTILLUS, *Gould.* ...	384	*	*	*	*	*	...	...	...	...	...	...	...	...	...
439	,, RUSSATA, *Gould.*		...	...	*	*	*	...	...	...	...	...	...	...	...	...
440	SCYTHROPS NOVÆ-HOLLANDIÆ, *Lath.*	386	*	*	*	*	*	*	*	*	*	*	...	*	...	*
441	EUDYNAMIS CYANOCEPHALA, *Lath.* ... *(E. flindersi,* Gould.*)*	387	*	*	*	*	*	*	*	*	...	...	...	...	...	*
442	CENTROPUS PHASIANUS, *Lath.* ...	388	...	...	*	*	*	*	*	...	...	...	...	...	...	...
443	,, *(subsp. a.)* MACROURUS, *Gould.* ...	389	*	*	...	*	...	...	...	...	...	...	...	...	...	...
444	,, *(subsp. b.)* MELANURUS, *Gould.* ...	390	*	*	...	...	...	...	...	...	...	...	...	...	...	*
445	PLICTOLOPHUS *(Cacatua)* GALERITA, *Lath.*	391	*	*	*	*	*	*	*	*	*	*	*	*	*	* †
446	,, *(Cacatua)* LEADBEATERI, *Vigors* ...	392	...	...	...	...	...	...	...	*	*	*	*	...	*	...
447	,, (,,) GOFFINII, *Finsch.* ...	b	...	...	...	...	...	...	...	* ?	...	...	...	...	...	...
448	,, (,,) SANGUINEUS, *Gould.* ...	393	*	*	*	...	...	...	...	*	*	...	...	...	...	...
449	,, (,,) GYMNOPIS, *Sclater.* ...	c	*	*	*	...	...	...	...	...	...	* ?	...	...	...	...
450	,, *(Eolophus)* ROSEICAPILLA, *Vieill.*...	394	*	*	...	...	...	...	...	*	*	*	*	...	...	...

a—P. Z. S., 1877, p. 351.
b—Finsch. Papag. 1 p., 308. *Hab.* Queensland *(Sclater).*
c—P. Z. S., 1871, p. 493.
† ?—*C. triton. Tem.*

List of Australian Birds,
(Continued.)

NAME OF SPECIES	Species No. in Gould's Handbook to Birds of Australia or Other References	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich.& Clar. Rr. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
ICMETIS NASICA, *Temm.* ... ... *(L. tenuirostris,* Wagl.)	395	...	*	...	...	...	...	...	*	*	*	*	...	...	...
,, PASTINATOR, *Gould.* ...	396	...	...	...	...	...	...	...	...	...	...	...	...	*	...
ALLOCEPHALON GALEATUM, *Lath.* ...	405	...	...	...	...	...	*	*	*	...	*	...	*	...	...
ALYPTORHYNCHUS BANKSII, *Lath.*...	397	...	...	*?	...	*	*	*	*	*	...	...	...	...	...
,, STELLATUS, *Wagl.* ... *(C. macrorhynchus,* Gould.)	398	*	*	*	*	...	...	...	...	...	...	...	...	...	...
,, *(subsp. a.)* NASO, *Gould.* ...	399	...	...	...	...	...	...	...	...	...	...	...	...	*	...
,, SOLANDRI, *Temm.* ... *(C. leachii,* Kuhl.)	400	...	...	*	*	*	*	*	*	*	*	...	...	...	...
,, FUNEREUS, *Shaw.* ...	401	...	...	...	...	*	*	*	*	*	*	*	...	...	...
,, (var.) *xanthonotus,* Gould. ...	402	...	...	...	...	...	...	...	...	...	...	*	*	...	...
,, BAUDINII, *Vig.*	403	...	...	...	...	...	...	...	...	...	...	...	...	*	...
ICROGLOSSUS ATERRIMUM, *Gmel.* ...	404	...	...	*	...	...	...	...	...	...	...	...	...	...	*
,, *(var. a.)* GOLIATH, *Kuhl.* ...		...	...	*	...	...	...	...	...	...	...	...	...	...	*
LOPSITTACUS NOVÆ-HOLLANDIÆ, *Gml.*	440	*	*	...	...	...	*	...	*	*	*	*	...	*	...
LYTELIS BARRABANDI, *Swains.* ...	406	...	...	...	...	...	...	...	*	*	*	...	...	...	...
,, MELANURA, *Vigors.* ...	408	...	...	...	...	...	...	...	*	*	*	*	...	*	...
,, ALEXANDRÆ, *Gould.* ...	407	...	*‡	...	...	...	...	...	...	...	...	...	...	...	...
ROSMICTUS SCAPULATUS, *Bechst.* ...	409	...	...	...	...	*	*	*	*	...	*	...	...	...	...
(Lus. nat.) INSIGNISSIMUS, *Gould.*	a	...	...	...	...	*	...	...	...	...	...	...	...	...	...
(Ptistes) ERYTHROPTERUS, *Gml.*...	410	...	...	*?	*	*	*	...	...	...	...	...	...	...	...
(,,) COCCINEOPTERUS, *Gould.*	411	*	*	*	...	...	...	...	...	...	...	...	...	...	...
ATYCERCUS BARNARDI, *Vig. & Horsf.*	412	...	...	...	...	...	...	...	*	*	*	*	...	...	...
,, SEMITORQUATUS, *Q. et Gaim.*	413	...	...	...	...	...	...	...	...	...	...	...	...	*	...
,, ZONARIUS, *Shaw.*	414	...	...	...	...	...	...	...	*	*	*	...	...	...	...
,, PENNANTII, *Lath.*... ...	415	...	...	...	...	...	...	*	*	*	*	...	...	...	...
,, ADELAIDENSIS, *Gould.* ...	416	...	...	...	...	...	...	...	*	*	*	...	...	...	...
,, FLAVIVENTRIS, *Temm.* ...	417	...	...	...	...	...	...	...	...	...	*	*	...	...	...
,, FLAVEOLUS, *Gould.* ...	418	...	...	...	...	...	...	...	*	*	*	...	...	...	...
,, PALLIDICEPS, *Vig.* ...	419	...	...	...	*?	*	...	...	*	*	...	...	...	...	...

Z. S., 1875, p. 314.

‡ *Hab.* Howell's Ponds, 16° 54′ 7″ S.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. Rr. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
479	PLATYCERCUS AMATHUSIÆ, *Bp.* ... *(P. cyanogenys,* Gould.)	420	•	•	•	•	...	...	...	...	...	...	...	...	...	...
480	,, BROWNII, *Temm.* ... *(P. venustus,* G. R. Gray.)	421	•	...	...	...	...	...	...	...	...	...	...	...	...	...
481	,, EXIMIUS, *Shaw*	422	...	...	...	...	...	•	•	•	•	•	•	•	...	...
482	,, *(var.)* SPLENDIDUS, *Gould.* ...	423	...	...	...	...	...	•	...	•	•	...	...	...	...	...
483	,, MASTERSIANUS, *Ramsay.*	a	...	...	...	...	...	•	...	•	•	...	...	...	...	...
484	,, IGNITUS, *Leadb.* ... {	Vol. V. pl. 30.	...	...	...	...	...	...	...	•	•	...	...	...	...	...
485	,, ICTEROTIS, *Temm.* ...	424	...	...	...	...	...	...	...	...	...	...	•?	...	•	...
486	,, SPURIUS, *Kuhl.* ... ... *(Purpureicephalus pileatus,* Vig.)	425	...	...	...	...	...	...	...	...	...	...	...	...	•	...
487	PSEPHOTUS HÆMATOGASTER, *Gould*...	426	...	...	...	...	...	...	...	•	•	•	•	...	•	...
488	,, *(var.)* XANTHORRHOUS, *Gould.*	427	...	...	...	...	...	...	...	•	•	•	•	...	•	...
489	,, CHRYSOPTERYGIUS, *Gould.*	428	•	•	...	...	...	...	...	...	...	...	...	...	...	...
490	,, PULCHERRIMUS, *Gould.* ...	429	...	...	...	...	•	•	...	•	...	...	...	...	...	...
491	,, MULTICOLOR, *Temm.* ...	430	...	...	...	...	...	•	...	•	•	•	•	...	...	...
492	,, HÆMATONOTUS, *Gould.* ...	431	...	...	...	...	...	•	...	•	•	•	•	...	...	...
493	EUPHEMA VENUSTA, *Temm.* ... ... *(E. chrysostoma,* Kuhl.)	432	...	...	...	...	...	...	...	•	•	•	•	•	...	...
594	,, PULCHELLA, *Shaw.* ...	436	..	...	...	...	...	•	•	•	•	•	•	...	...	...
495	,, ELEGANS, *Gould.*	433	...	...	...	...	...	•	•	•	...	•	•	...	•	...
496	,, CHRYSOGASTRA, *Lath.* ... *(E. aurantia,* Gould.)	434	...	...	...	...	...	...	•	•	•	•	•	...	...	...
497	,, PETROPHILA, *Gould.* ...	435	...	...	...	...	...	...	...	...	...	...	...	...	•	...
498	,, SPLENDIDA, *Gould*... ...	437	...	...	...	...	...	...	...	...	•	•	•	...	•	...
499	,, BOURKII, *Gould.*	438	...	...	...	...	...	...	...	•	•	•	•	...	...	...
500	MELOPSITTACUS UNDULATUS, *Shaw*....	439	...	•	...	...	...	...	...	•	•	•	•	...	•	...
501	PEZOPORUS FORMOSUS, *Lath*.... ...	441	...	...	...	...	...	•	•	•	...	•	•	•	...	...
502	*(Geopsittacus)* OCCIDENTALIS, *Gould.*	442	...	...	...	...	...	...	...	...	...	...	...	•	...	...
503	LATHAMUS DISCOLOR, *Shaw*.... ...	443	...	...	...	...	...	•	•	•	•	•	•	•	...	...
504	TRICHOGLOSSUS NOVÆ-HOLLANDIÆ, *Gml.* *(T. multicolor,* Gml.)	444	...	•	•	•	•	•	•	•	•	•	•	•	...	...

a—P. L. S., N. S. W., II, p. 27.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia	Tasmania.	West Australia.	S. Coast N. Guinea.
505	Trichoglossus rubitorquis, *Vig. & H.*	445	*	...	*	...	...	...	...	...	...	...	...	...	...	...
506	,, chlorolepidotus, *Kuhl.* ...	446	...	...	...	*	*	*	*	*	*	*	...	...	...	...
507	(*Ptilosclera*) versicolor, *Vigors.* ...	447	*	*	*	...	...	...	...	...	...	...	...	...	...	...
508	(*Glossopsitta*) concinnus, *Shaw.* ...	448	...	...	...	*	*	*	*	*	*	*	*	*	...	...
509	(,,) porphyrocephalus, *Dietr.*	449	...	...	...	...	...	...	...	*	...	*	*	...	*	...
510	(,,) pusillus, *Shaw.*	450	...	...	...	*	*	*	*	*	*	*	*	*	...	...
511	Cyclopsitta coxenii, *Gould.* ...	Supp. pl. 65.	...	...	...	...	...	*	*	*	...	...	...	...	...	...
512	,, MacLeayana, *Ramsay.* ... (*C. Maccoyi*, Gould.†)	a	...	...	...	*	...	...	...	...	...	...	...	...	...	...
513	Ptilinopus swainsonii, *Gould.* ...	451	...	...	*	*	*	*	*	*	...	...	...	...	...	*
514	,, ewingii, *Gould.* ...	452	*	...	...	...	...	...	...	...	...	...	...	...	...	...
515	,, superbus, *Temm.* ... (*P. porphyrostictus*, Gould.)	453 b	*	...	*	*	*	...	...	...	...	...	...	...	...	*
516	Megaloprepia magnifica, *Temm.* ...	454	...	...	*	*	*	*	*	*	...	...	...	...	...	...
517	,, *(var.)* assimilis, *Gould.* ...	455	...	...	*	*	...	...	...	...	...	...	...	...	...	*
518	Carpophaga norfolciensis, *Lath.* ...	456	...	...	...	*	*	*	*	...	...	...	...	...	...	...
519	,, spilorrhoa, *G. R. Gray.*	457	*	...	*	*	*	...	...	...	...	...	...	...	...	*
520	Lopholaimus antarcticus, *Shaw* ...	458	...	...	*	*	*	*	*	*	...	...	...	...	...	...
521	Chalcophaps chrysochlora, *Wagl.*	459	*	...	*	*	*	*	*	*	...	*	...	...	...	...
522	,, *(subsp. a.)* longirostris, *Gould.*	460	*	...	*	*	...	...	...	...	...	...	...	...	...	*
523	Leucosarcia picata, *Lath.*	461	...	...	...	*	*	*	*	*	...	*	...	...	...	...
524	Phaps chalcoptera, *Lath.*	462	*	*	...	*	*	*	*	*	*	*	*	*	*	...
525	,, elegans, *Temm.*	463	*	...	...	...	...	*	*	*	...	*	*	*	*	...
526	,, histrionica, *Gould.*	464	*	...	...	...	...	...	...	*	*	*	*	...	...	...
527	Geophaps scripta, *Temm.*	465	...	...	...	*	*	*	*	*	*	*	*	...	...	...
528	,, smithii, *Jard. & Selb.* ...	466	*	*	...	...	...	...	...	...	...	...	...	...	...	...
529	Lophophaps plumifera, *Gould.* ...	467	*	*	...	...	...	...	...	...	*	...	*	...	...	...
530	,, ferruginea, *Gould.* ...	468	...	...	...	...	...	...	...	...	*	...	...	...	*	...
531	,, leucogaster, *Gould.* ...	Supp. pl. 69.	...	...	...	...	...	...	...	...	*	...	*	...	...	...
532	Ocyphaps lophotes, *Temm.* ...	469	*	*	...	...	...	...	...	*	*	*	*	...	...	...

a—M. Syd. Herald, Nov. 15, 1874. P. Z. S., 1875, p. 602. † P. Z. S., April, 1875, p. 314;= *C. leadbeateri, McCoy, Ann. & Mag of Nat. Hist., July, 1875, (4), XVI, p. 54.*

b—Ann. & Mag. Nat. Hist., 1874, (4), No. 74, p. 131. (See Remarks.)

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
533	Petrophassa albipennis, *Gould.* ...	470	•?	...	...	...	...	...	...	...	...	...	...	...	†	...
534	Erythrauchena humeralis, *Temm.*	471	•	•	...	•	•	•	•	•	...	•	...	...	...	•
535	Geopelia tranquilla, *Gould.* ...	472	•	...	...	•	•	•	•	•	...	•	•	...	...	...
536	,, placida, *Gould.*	473	•	•	...	•	...	...	...	...	...	...	...	...	...	•
537	,, *(Stictopelia)* cuneata, *Lath* ...	474	•	•	...	...	...	...	...	•	•	•	•	...	•	...
538	Macropygia phasianella, *Temm.* ...	475	...	...	...	•	•	•	•	•	...	•	...	...	...	‡
539	Talegallus lathami, *Gray.*... ...	476	...	...	•	•	•	•	•	•	...	...	...	...	...	...
540	Leipoa ocellata, *Gould.*	477	...	...	...	...	...	...	...	•	...	•	•	...	•	...
541	Megapodius tumulus, *Gould.* ...	478	•	•	•	•	•	...	...	...	...	...	...	...	...	...
542	,, assimilis, *Masters.* ...	a	...	...	•+	...	...	...	...	...	...	...	...	...	...	...
543	Turnix melanogaster, *Gould.* ..	479	...	...	...	...	•	...	•	...	...	...	...	...	...	...
544	,, varius, *Lath.*	480	...	...	...	•	•	•	•	•	•	•	•	•	•	...
545	,, scintillans, *Gould.*... ...	480a	...	...	...	...	...	...	...	...	...	...	...	...	•	...
546	,, melanotus, *Gould.*	481	...	...	...	•	...	•	•	•	•	...	...	...	...	...
547	,, castanotus, *Gould.*	482	•	...	...	...	...	...	...	...	...	...	...	...	...	...
548	,, velox, *Gould.*	483	...	...	...	...	...	•	•	•	•	•	...	...	•	...
549	,, pyrrhothorax, *Gould.* ...	484	...	...	•	...	...	•	•	•	•	•	•	...	...	...
550	Pedionomus torquatus, *Gould.* ...	485	...	...	...	...	...	...	...	•	...	•	•	...	...	...
551	Coturnix pectoralis, *Gould.* ...	486	...	...	...	•	•	•	•	•	•	•	•	•	...	...
552	Synoicus australis, *Lath.*	487	...	•?	•?	•	•	•	•	•	•	•	•	•	...	...
553	,, diemenensis, *Gould.* ...	488	...	...	...	...	...	...	...	...	...	...	...	•	...	...
554	,, sordidus, *Gould.*	489	...	...	...	...	...	...	...	...	...	...	•	...	...	...
555	,, cervinus, *Gould.*	490	•	•	•	...	...	...	...	...	...	...	...	...	...	•
556	Excalfatoria australis, *Gould.* ...	491	...	...	...	•	•	•	•	•	...	•	•	...	...	•‡
557	Dromaius novæ-hollandiæ, *Lath* ...	492	•?	•?	•	•	•	•	•	•	•	•	•	...	•?	...
558	,, irroratus, *Bartlett.* ...	493	•?	•?	...	...	...	...	...	...	...	...	...	•?	...	•
559	Casuarius australis, *Wall.* ...	494	...	...	•	•	...	...	...	...	...	...	...	...	...	...
560	Eupodotis australis, *Gray*	495	...	•	•	•	•	•	•	•	•	•	•	...	•	...
561	Œdicnemus grallarius, *Lath.* ...	496	•?	•?	•	•	•	•	•	•	•	•	•	...	...	...
562	Esacus magnirostris, *Geoff.* ...	497	•	•	•	•	...	...	...	...	...	...	...	...	...	...

a—P. L. S., N. S. W., vol. I, p. 59

† *Hab.* North West Coast.

‡ *Hab.* Islands Torres Straits.

List of Australian Birds,
(Continued.)

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania:	West Australia.	S. Coast N. Guinea.
Hæmatopus longirostris, *Vieill.* ...	498	•	•	•	•	•	•	•	•	...	•	•	•	•	•
,, unicolor, *Wagl.* ... (*H. fuliginosus*, Gould.)	499	•	•	•	•	•	•	•	•	...	•	•	•	•	...
,, opthalmicus, *Castl. & Rams.*	a	...	•	...	...	...	...	...	...	...	...	...	...	...	...
Lobivanellus lobatus, *Lath.* ...	500	...	...	...	•	•	•	•	•	•	•	•	...	...	...
,, miles, *Bodd.*,... ... (*L. personatus*, Gould.)	501	•	•	•	•?	...	...	...	...	...	...	...	...	...	•
Sarciophorus pectoralis, *Cuv.* ...	502	...	...	...	•	•	•	•	•	•	•	...	...	...	...
Charadrius longipes, *Temm.* ... *C. pluvialis orientalis*, Temm.	504	•	•	•	•	•	•	•	•	...	•	•	•	•	•
,, *(Squatarola)* helvetica, *Linn.*	503	...	...	•	•?	...	...	•	•	...	•	•	•	•	...
Eudromias australis, *Gould.* ...	505	...	...	...	...	...	...	...	•	•	•	•	...	...	...
,, veredus, *Gould.** ...	506	•	...	...	•?	...	•	•	•	...	...	...	...	...	...
Ægialitis geoffroyi, *Wagler.* ... *Hiaticula inornata*, Gould.†	511	•	•	•	•	...	...	...	...	...	...	...	...	...	•
,, mongolus, *Pallas.* ... *Hiaticula inornata*, Gould.‡	b	...	...	•	•	...	...	...	...	...	...	...	...	...	•
,, mastersi, *Ramsay* ...	c	...	•	...	•	...	...	...	...	...	...	...	...	...	...
,, bicinctus, *Jard. & Selb.* ...	512	...	•	•	•	•	•	•	•	...	•	•	•	•	•
,, monarchus, *Geoff.*	508	...	...	...	...	...	•	•	•	...	•	•	•	•	...
,, nigrifrons, *Cuv.*	509	...	...	...	•	•	•	•	•	•	•	•	...	...	...
,, hiaticula, *Linn.*	507	...	...	...	...	...	...	...	•	...	...	...	...	...	•
,, ruficapillus, *Temm.* ...	510	•	•	•	•	•	•	•	•	...	•	•	•	•	•
Erythrogonys cinctus, *Gould.* ...	513	...	•	...	...	...	...	•	•	•	•	•	...	...	...
Totanus stagnatilis, *Temm.* ...	530	...	...	...	...	...	•	...	•	...	...	...	...	...	•
,, brevipes, *Cuv.* ... (*T. griseopygius*, Gould.)	531	...	•	•	•	...	•	•	•	...	...	...	...	...	•
Actitis hypoleucos, *Linn.* ...	528	•	•	•	•	•	•	•	•	...	•	•	•	•	•
Actiturus bartramius, *Wilson.* ...	514	...	...	...	...	...	...	...	•	...	...	...	...	...	...
Cinclus interpres, *Linn.*	532	•	•	•	•	•	•	•	•	...	•	•	•	•	•
Tringa canutus, *Linn.*	525	...	...	...	...	...	•	...	•	...	•	...	...	...	...
,, tenuirostris, *Horsf.* ...	526	•	•	•	•	...	•	...	•	...	...	...	...	•	•

a—P. L. S. of N. S. W., I. pp. 384, 385.

* *E. veredus*, Gould, is not identical with *E. asiaticus*, Pallas. *See Ibis.*, 1870; p.p. 201, 213.

† Gould. Bds. Aust. VI, pl. 19; *larger fig.*

‡ Gould. Bds. Aust. VI, pl. 19; smaller fig.

b—Harting, Ibis, 1870, p. 384, sp. 8.

c—P. L. S. of N. S. W., vol. I, p. 136.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
589	TRINGA *(Terekia)* CINEREA, *Gmel.* ...	527	...	...	...	...	...	•	...	•	...	...	...	...	...	...
590	,, *(Schæniclus)* ALBESCENS, *Temm.* *(Calidris australis,* Cuv.*)*	524	•	•	•	•	...	•	•	•	...	•	•	•	•	•
591	,, (,,) SUBARQUATA, *Gmel.*	523	•	•	•	...	...	•	•	•	...	•	•	•	•	•
592	,, *(Limnocinclus)* ACUMINATA, *Horsf.*	522	•	•	•	•	•	•	•	•	•	•	•	•	•	•
593	GLAREOLA GRALLARIA, *Temm.* ...	515	•	...	•	...	...	...	•	•	...	...	...	...	...	...
594	,, ORIENTALIS, *Leach.* ...	516	•	...	...	...	...	...	...	...	...	...	...	...	...	...
595	RECURVIROSTRA RUBRICOLLIS, *Temm.*	519	...	...	...	•	•	•	•	•	...	•	•	•	•	...
596	CLADORHYNCHUS PECTORALIS, *Dubus.*	518	...	...	...	...	...	...	...	•	•	•	•	...	•	...
597	HIMANTOPUS LEUCOCEPHALUS, *Gould.*	517	•	•	...	•	•	•	•	•	...	•	•	...	•	...
598	LIMOSA MELANUROIDES, *Gould.* ...	520	•	...	•	...	...	...	...	•	...	...	...	...	...	...
599	,, UROPYGIALIS, *Gould.* ...	521	•	•	•	•	•	•	•	•	...	•	•	•	•	...
600	GLOTTIS GLOTTOIDES, *Linn.*	529	•	•	•	•	•	•	•	•	•	•	•	...	•	...
601	GALLINAGO AUSTRALIS, *Lath.* ...	533	...	...	...	•	•	•	•	•	...	•	•	•	•	...
602	RHYNCHÆA AUSTRALIS, *Gould.* ...	534	...	...	...	•	...	•	•	•	•	•	•	...	•	...
603	NUMENIUS CYANOPUS, *Vieill.*... ...	535	•	•	•	•	•	•	•	•	•	•	•	•	•	•
604	,, UROPYGIALIS, *Gould.* ...	536	•	•	•	•	•	•	•	•	...	•	•	•	•	•
605	,, MINOR, *Schleg.*	537	..	•	...	.	...	•	•	•	...	•	•	...	•	...
606	IBIS FALCINELLUS, *Linn.*	540	•	•	•	•	•	•	•	•	...	•	•	...	...	...
607	GERONTICUS SPINICOLLIS, *Jameson.* ...	538	•	•	...	•	•	•	•	•	•	•	...	...	...	...
608	THRESKIORNIS STRICTIPENNIS, *Gould.*	539	...	•	...	•	•	•	•	•	...	•	...	...	...	...
609	PLATALEA MELANORHYNCHA, *Reich* ... *P. regia,* Gould.	541	...	•	...	•	...	•	•	•	...	•	...	...	...	...
610	,, FLAVIPES, *Gould.*	542	...	...	...	•	...	•	•	•	...	•	•	...	...	...
611	GRUS AUSTRALASIANUS, *Gould.* ...	543	...	•	...	•	•	•	•	•	•	•	•	...	...	...
612	MYCTERIA AUSTRALIS, *Lath.*	544	•	•	•	•	•	•	•	•	...	...	...	...	...	•
613	ARDEA CINEREA, *Linn.*	545	...	...	...	...	...	•	...	...	...	•	...	...	...	...
614	,, SUMATRANA, *Raffl.*	546	•	...	...	•	•	•	•	•	...	...	...	...	...	...
615	,, PACIFICA, *Lath.*	547	•	•	...	•	•	•	•	•	•	•	•	...	•	...
616	,, NOVÆ-HOLLANDIÆ, *Lath.* ...	548	•	...	...	•	•	•	•	•	...	...	...	•	...	...

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dist.	N. S. Wales.	Interior	Victoria	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
17	HERODIAS ALBA, *Linn.* ...	549	•	•	•	•	•	•	•	•	...	•	•	...	•	...
18	,, INTERMEDIA, *v. Hasselq* ... (*H. plumiferus*, Gould.)	550	•	•	•	•	•	•	•	•	...	•	•	...	...	•
19	,, MELANOPUS, *Wagl.* ... (*A garzetta*, Linn.)	551	•	•	•	•	•	•	•	•	...	•	...	...	•	•
20	,, GARZETTA, *Linn.* ... (*H. immaculatus*, Gould.)	552	...	•	...	•	•	•	...	...	...	...	...	...	...	...
21	,, PICATA, *Gould.*	554	•	•	...	...	...	...	...	...	...	...	...	...	...	...
22	DEMIEGRETTA SACRA, *Gmel.* ... ... *D. greyi*, Gray; *D. jugularis*, Forst.	555 556	•	•	•	•	•	...	...	...	...	...	...	...	...	...
23	,, ASHA, *Sykes.*	553	...	...	...	...	...	•	•	...	...	...	...	...	...	...
24	NYCTICORAX CALEDONICUS, *Lath.* ...	557	•	•	•	•	•	•	•	•	...	•	•	...	...	•
25	BOTAURUS POICILOPTERUS, *Wagl.* ...	558	...	•	...	•	•	•	•	•	...	•	•	•	...	...
26	BUTOROIDES FLAVICOLLIS, *Lath.* ...	559	•	•	•	•	•	•	•	•	...	•	•	·	•	•
27	,, MACRORHYNCHA, *Gould.*	560	...	...	...	...	...	•	•	•	...	...	...	...	...	...
28	,, JAVANICA, *Horsf.* ...	561	•	•	•	•	•	•	•	•	...	...	...	...	...	
29	ARDETTA MINUTA, *Linn.* ... ... (*A. pusilla*, V.)	562	...	•	...	•	•	•	•	•	...	•	...	...	...	...
30	PORPHYRIO MELANOTUS, *Temm.* ...	563	•	•	...	•	•	•	•	•	•	•	•	•	...	...
31	,, BELLUS, *Gould.*	564	...	...	...	...	...	...	...	...	...	...	...	...	•	...
32	TRIBONYX MORTIERI, *DuBus.*† ...	565	...	...	...	...	...	...	...	...	...	...	•	•	...	...
33	,, VENTRALIS, *Gould.* ...	566	...	•	...	...	•	...	...	•	•	•	•	...	•	...
34	GALLINULA TENEBROSA, *Gould.* ...	567	...	...	...	•	...	•	•	•	...	•	•	...	...	...
35	,, RUFICRISSA, *Gould.* ...	Suppl. pl. 79	...	...	...	...	•	•	...	...	...	...	...	...	...	•
36	FULICA AUSTRALIS, *Gould.*	568	...	•	...	...	•	•	•	•	...	•	•	...	•	...
37	PARRA GALLINACEA, *Temm.*‡ ...	569	•	•	•	•	•	•	•	•	...	...	...	...	...	...
38	HYPOTÆNIDIA PHILIPPENSIS, *Linn.* ...	570	•	•	•	•	•	•	•	•	•	•	•	...	•	...
39	,, (*Lewinia*) BRACHIPUS, *Swains.*	571	...	...	...	...	...	•	•	•	...	•	...	•	•	...
40	RALLINA TRICOLOR, *Gray.*	572	...	...	•	•	...	...	...	...	...	...	...	...	...	•
41	EULABEORNIS CASTANEIVENTRIS, *Gld.*	Supp. pl. 78.	•	...	...	...	...	...	...	...	...	...	...	...	...	...
42	PORZANA FLUMINEA, *Gould.*	573	...	...	...	...	•	•	•	•	•	•	•	•	...	...

† *T. gouldii*, Sclater. ‡ ? *cristata*, V.

List of Australian Birds,
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	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Darr. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.
643	Porzana palustris, *Gould.*	574	...	...	...	...	...	*	*	*	...	*	*
644	,, tabuensis, *Gmel.*	575	...	...	...	*	*	*	*	*	...	*	*
645	,, cinereus, *Vieill.* ... ... (*P. quadristrigata*, Horsf.	576	*	...	*	*	*	*	...	...	...	...	...
646	Cygnus atratus, *Lath.*	577	...	...	...	*	*	*	*	*	...	*	*
647	Cereopsis novæ-hollandiæ, *Lath.*...	578	...	...	...	...	...	...	...	*	...	*	*
648	Anseranas melanoleuca, *Lath.* ...	579	*	*	...	*	*	*	*	*	...	*	*
649	Branta *(Chlamydochen)* jubata, *Lath.*	580	...	...	...	*	*	*	*	*	*	*	...
650	Nettapus pulchellus, *Gould.* ...	581	*	*	*	*	...	...	...	...	...	...	...
651	,, albipennis, *Gould.* ...	582	...	...	...	*	*	*	*	*	...	...	...
652	Tadorna radjah, *Garnot.*	583	*	*	...	*	*	*	...	...	...	...	...
653	Casarca tadornoides, *Jard.* ...	584	...	...	...	...	...	...	...	*	...	*	*
654	Dendrocygna vagans, *Eyton.* .. (*D. gouldi*, Bp.)	591	...	*	*	*	*	*	*	*	*	...	...
655	,, *(Leptotarsus)* eytoni, *Gould*...	592	...	*	*	*	*	*	*	*	...	...	*
656	Stictonetta nævosa, *Gould*.... ...	587	...	...	...	...	...	...	...	...	...	*	*
657	Anas superciliosa, *Gmel.*	585	*	*	*	*	*	*	*	*	*	*	*
658	,, *(Virago*)* castanea, *Eyton.* ... (*A. punctata*, Cuv.)	586	...	...	...	*	*	*	*	*	*	*	*
659	Spatula rhynchotis, *Lath.*... ...	588	...	...	...	...	*	*	*	...	*	*	*
660	,, clypeata, *Linn.*	589	...	...	...	...	...	...	...	*‡	...	...	...
661	Malacorhynchus membranaceus, *Lh.*	590	...	*?	...	*?	*	*	*	*	...	*	*
662	Nyroca australis, *Gould.*	593	...	*?	...	*?	*	*	*	*	...	*	*
663	Erismatura australis, *Gould.* ...	594	...	...	...	...	...	...	...	...	...	*	*
664	Biziura lobata, *Shaw.*	595	...	...	...	...	...	...	*	*	*	*	*
665	Podiceps, cristatus, *L.* (*subsp.*) australis, *Gould.* ...	665	...	...	...	...	...	*	*	*	*	*	*
666	,, nestor, *Gould.*	666	...	...	...	...	...	*	*	*	*	*	*
667	,, novæ-hollandiæ ... (*P. gularis*, Gould.)	667	...	*	...	*	*	*	*	*	*	*	*

* Newton, P. Z. S., 1871, p. 65.

‡ Gould, Handbook, p. 370.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES	Species No. in Gould's Handbook to Birds of Australia or other References	Pt. Dar. & Pt. Essing.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. Rr. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.	S. Coast N. Guinea.
68	Catarractes chrysocome, *Lath.* ... (*Chrysocome catarractes*, Gmel.)...	668	...	*	...	...	...	...	...	*	...	...	*	*	...	...
69	Eudyptula minor, *Forst.*	669	...	...	...	...	...	...	...	*	...	*	*	*	...	...
70	,, undina, *Gould.*	670	...	...	...	...	...	...	...	...	...	...	...	*	...	...
71	Larus pacificus, *Lath.*	596	...	...	...	*	*	*	*	*	...	*	*	*	*	...
72	,, *(Xema)* novæ-hollandiæ, *Steph.* (*X. jamesonii*, Gould.)	597	...	...	...	*?	*	*	*	*	...	...	...	...	...	...
73	,, (,,) gouldii, *Bp.*	598	*	...	*	...	...	...	...	...	...	...	...	...	...	...
74	,, (,,) longirostris, *Masters*...	a	...	...	...	...	...	...	...	...	...	...	...	...	*	...
75	Stercorarius antarcticus, *Less.* ...	599	...	...	...	*	...	*	*	*	...	*	*	*	*	...
76	Hydrochelidon hybrida, *Pall.* ... (*H. fluviatilis*, Gould.)	610	...	*	...	*	...	*	*	*	...	*	*	...	*	...
77	Sterna caspia, *Pall.*	600	...	*	*	*	*	*	*	*	...	*		*	...	...
78	,, anglica, *Mont.* ... ... (*Gelochelidon macrotarsa*, Gould.)	608	...	...	...	*	...	*	*	*	...	...	...	...	...	...
79	,, media, *Horsfield.* ... ... (*Thalasseus bengalensis, T. torresii*, Gd.)	603	*	*	*	...	...	...	...	...	...	...	...	...	...	...
80	,, bergii, *Licht.* ... ... *pelecanoides*, King; *poliocercus*, Gould.	601 602	*	*	*	*	*	*	*	*	...	*	*	*	*	*
81	,, dougalli, *Mont.* ... ... (*S. gracilis*, Gould.)	605	...	...	*	...	...	*	...	...	...	...	...	...	*	...
82	,, frontalis, *Gray.* ... ... (*S. melanorhyncha*, Gould.)	604	...	...	*	*	*	*	*	*	...	*	*	*	...	...
83	,, melanauchen, *Temm.* ...	606	*	...	*	...	...	...	...	*	...	...	...	...	...	*
84	,, anæstheta, *Scop.* ... ... (*Onychoprion panayensis*, Gould.)	612	*	...	*	*	*	*	...	*	...	*	*	...	*	*
85	,, nigrifrons, *Masters.* ...	b	...	...	*	...	...	*	...	...	...	...	...	...	*‡	...
86	,, fuliginosa, *Gmel.*..	611	*	...	*	*	...	*	...	*	...	*	*	...	*	*
87	Sternula nereis, *Gould.*	607	...	...	...	...	...	...	...	...	...	*	*	*	*	...
88	,, sinensis, *Gmel.* ... ... (*S. placens*, Gould.)	c	...	*	*	*	*	*	*	*	...	...	...	...	...	*
589	,, inconspicua, *Masters.* ...	d	...	...	*	...	...	...	...	...	...	...	...	...	...	...
690	Gygis candida, *Gmel.*	609	*	...	...	*	...	...	...	*	...	...	...	...	...	*

a—P. L. S., N. S. W., II, p. 113.
b—P. L. S., N. S. W., I, p. 62.
c—*Gould*, Ann. & Mag. Nat. Hist., (4), VIII, p. 192.
d—P. L. S., N. S. W., I, p. 63.
‡—Caught in Long. 119° E., Lat. 1853° S.

List of Australian Birds,
(Continued.)

	NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essington	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. Rr. Dist.	N. S. Wales.	Interior.	Victoria.	South Australia.	Tasmania.	West Australia.
691	ANOUS STOLIDUS, *Linn.*	613	*	*	*	*	*	*	*	*	...	*	*	...	*
692	,, TENUIROSTRIS, *Temm.* ... *(A. melanops,* Gould.*)*	614	...	...	*	*	...	...	...	*	...	*	*	...	*
693	,, MELANOGENYS, *Gray.*... ...	a	...	...	*	...	...	...	...	...	...	...	...	...	...
694	,, LEUCOCAPILLUS, *Gould.* ...	615	*	...	*	*	...	...	...	...	...	...	...	...	...
695	,, CÆRULEUS, *F. D. Bennett.* ... *(Anous cinereus,* Gould.)	616	*	...	...	...	...	...	...	*	...	...	...	...	...
696	DIOMEDEA EXULANS, *Linn.*	617	...	...	...	...	...	...	...	*	...	*	*	*	*
697	,, BRACHYURA, *Temm.* ...	618	†	...	...	...	...	...	...	...	...	...	...	...	...
698	,, CAUTA, *Gould.*	619	...	...	...	...	...	*	...	*	...	*	*	*	*
699	,, MELANOPHRYS, *Temm.* ...	622	...	...	...	...	*	*	...	*	...	*	*	*	*
700	,, CULMINATA, *Gould.* ...	620	...	...	...	...	...	...	...	*	...	*	*	*	*
701	,, CHLORORHYNCHA, *Gmel.* ...	621	...	...	...	...	...	...	...	*	...	*	*	*	*
702	,, *(Phœbetria)* FULIGINOSA, *Gmel.*	623	...	...	...	...	...	...	...	*	...	*	*	*	*
703	FULMARUS *(Ossifraga)* GIGANTEUS, *Gm.*	624	...	...	..	...	...	...	...	*	...	*	*	*	*
704	,, *(Majaqueus)* CONSPICILLATUS, *Gd.*	625	...	...	...	...	...	...	...	*	...	...	...	‡	...
705	,, *(Adamastor)* GELIDUS, *Gmel.* ... *(A. cinerea,* Gould.)	626	...	...	...	...	...	...	...	*	...	*	*	*	*
706	PTERODROMA MACROPTERA, *Smith.* ...	627	..	...	...	...	...	...	...	*	...	...	...	*	...
707	,, ATLANTICA, *Gould.* ...	628	...	...	...	...	...	...	...	...	...	...	...	*	...
708	,, SOLANDRI, *Gould.* ...	629	...	...	...	...	...	*	...	*	...	*	*	*	*
709	,, *(Æstrelata)* LESSONI, *Garn.* *(P. leucocephala,* Forst.*)*	630	...	...	...	...	*	...	...	*	...	*	*	*	*
710	,, (,,) MOLLIS, *Gould.* ...	631	...	...	...	...	...	...	...	...	...	...	...	*?	...
711	,, (,,) LEUCOPTERA, *Gould.*	632	...	...	...	...	...	*	...	*	...	*	*	*	*
712	,, (,,) COOKII, *G. R. Gr.*...	633	...	...	...	*	...	*	...	*	...	...	...	...	...
713	,, *(Halobæna)* CÆRULEA, *Gmel.*	634	...	...	...	...	...	...	...	*	...	*	*	*	*
714	PUFFINUS NUGAX, *Sol.*... ... ... *(P. assimilis,* Gould.)	635	...	...	...	...	...	*	...	*	...	*	*	*	...
715	,, *(Nectris)* BREVICAUDUS, *Brandt.*	636	...	...	...	...	...	*	...	*	...	*	*	*	*
716	,, *(Nectris)* CARNEIPES, *Gould.* ...	637	...	...	...	‡‡	...	...	...	...	...	...	...	...	*

a—*Gen. Bds.*, III, p. 601, pl. 182; see P. Z. S., 1876, p. 670.

† North Australia. *? Gould.*
‡ North-East Coast.

List of Australian Birds,
(Continued.)

NAME OF SPECIES.	Species No. in Gould's Handbook to Birds of Australia, or Other References.	Pt. Dar. & Pt. Essington.	Gulf of Carpentaria.	Cape York.	Rockingham Bay.	Port Denison.	Wide Bay District.	Rich. & Clar. R. Dis.	N. S. Wales.	Interior.	Victoria.	South Australia	Tasmania.	West Australia.	S. Coast N. Guinea.
PUFFINUS SPHENURUS, *Gould.* ...	638	...	...	...	...	...	•	...	•	...	•	•	•	•	...
FULMARUS GLACIALOIDES, *Smith.* ...	639	...	...	...	...	...	•	...	•	...	•	•	•	•	...
DAPTION CAPENSIS, *Linn.*	640	...	...	•	...	...	•	...	•	...	•	•	•	•	...
PRION TURTUR, *Smith.*	641	...	...	...	...	...	•	...	•	...	•	•	•	•	...
,, ARIEL, *Gould.*	642	...	...	...	...	...	...	...	•	...	•	•	•	...	...
,, BANKSII, *Smith.*	643	...	...	...	...	...	•	...	•	...	•	•	•	•	...
,, VITTATA, *Forst.*	644	...	...	...	...	...	•	...	•	...	•	•	•	•	...
PROCELLARIA NEREIS, *Gould*	645	...	...	...	...	...	•	...	•	...	•	•	•	•	...
,, *(Oceanites)* OCEANICA, *Banks.* ...	646	...	...	...	...	...	•	...	•	...	•	•	•	•	...
,, *(Fregetta)* MELANOGASTER, *Gould.*	647	...	...	...	...	...	•	...	•	...	•	•	•	•	...
,, *(Pelagodroma)* GRALLARIA, *Vieill.*	648	...	...	...	...	...	•	...	•	...	•	•	•	•	...
,, (,,) FREGATA, *Linn* ...	649	...	...	...	...	...	...	...	...	...	...	•	...	•	...
PELECANOIDES URINATRIX, *Gmel.* ...	650	...	...	...	...	...	•	...	•	...	•	•	•	...	...
PHAËTON ÆTHEREUS, *Linn.*		...	...	•	...	...	•	...	...	...	...	...	...	...	•
,, RUBRICAUDA, *Bodd.* ... *(P. phœnicurus,* Gmelin.)	660	•	...	•	•	...	...	...	•	...	...	...	...	...	•
PLOTUS NOVÆ-HOLLANDIÆ, *Gould.* ...	657	•	•	•	•	•	•	•	•	•	•	•	...	...	•
SULA SERRATOR, *Banks.*	661	...	...	...	...	•	•	•	•	...	•	•	•	•	...
,, CYANOPS, *Sundev.*	662	•	...	•	•	...	•	...	•	...	•	•	...	...	...
,, FIBER, *Linn.*	663	•	•	•	...	...	...	...	...	...	...	...	...	...	•
,, PISCATOR, *Linn.*	664	•	...	•	...	...	...	...	...	...	...	...	...	...	•
GRACULUS NOVÆ-HOLLANDIÆ, *Steph.*	652	...	...	•	•	•	•	•	•	...	•	•	•	•	...
,, VARIUS, *Gm.*	653	...	...	...	...	...	•	...	•	...	•	•	...	•	...
,, LEUCOGASTER, *Gould.* ...	654	...	...	...	...	•	•	•	...	...	•	•	•	...	...
,, MELANOLEUCUS, *Vieill.* ...	655	...	...	...	•	•	•	•	•	...	•	•	•	•	...
,, STICTOCEPHALUS, *Bp.* ...	656	...	...	...	•	•	•	•	•	...	•	•	...	•	...
PELECANUS CONSPICILLATUS, *Temm* ...	657	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ATAGEN *(Tachypetes)* ACQUILUS, *Linn.*	658	•	•	•	•	...	...	...	...	...	...	...	...	...	•
,, MINOR, *Gmel.*	659	•	...	•	•	...	•	...	...	...	...	...	...	...	•

Birds recorded in Gould's Handbook, from "*Queensland*," are noted in the "*Wide Bay*" column.

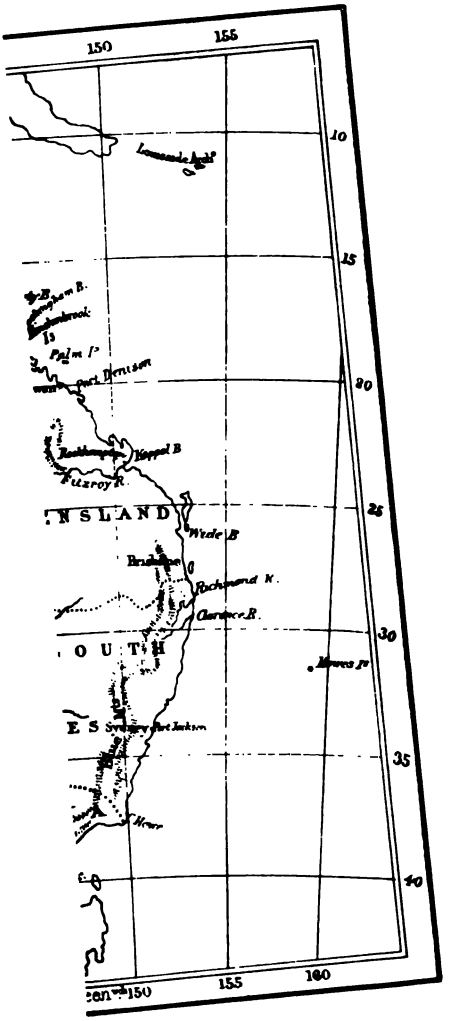
Remarks on foregoing List of Australian Birds.

The authority refers to the species name only.—The *first* column indicates the No. of the species in this list, for future reference; the *third*, the No. of the species in Gould's Handbook, or references to other works; the remainder show the distribution of the different species over Australia; the last to the South portion of New Guinea, and has been compiled from collections made at Yule Island, Katow, Port Moresby, Fly River and China Straits, &c., by D'Albertis, Goldie, the Macleay Expedition, Pettard and Broadbent, and the Revs. Messrs. McFarlane and Lawes. Since the publication of Mr. Gould's Handbook in 1865, the territorial boundaries of the different colonies have altered considerably, so that the range of the different species can be but indefinitely expressed by such wide terms as "Victoria," "Queensland," "New South Wales," &c.; large portions of the country formerly known as N. S. W., now belong to Queensland; and many other changes have taken place. I have therefore given the particular localities in which most of our large collections have been made, purposely to show the spread of certain species. In instances, where the particular species has not to my knowledge been obtained in these localities, a more comprehensive habitat, as the names of the Colonies in which they are found, has been resorted to.

Where any confusion through the choice of names is likely to occur, that previously in use among Australian ornithologists has been given in italics.

The small sketch map accompanying this list shows the boundaries of the Colonies as they now stand, and the position of the other localities mentioned.

The number of species enumerated in Mr. Gould's Handbook as inhabiting Australia in 1865 was 672 in all. This number has been increased of late years by the discoveries of new species, and by occasional visitors from other countries, to 744, most of which are enumerated from North-east Australia or Queensland.



* Mr. Diggles has kindly forwarded me the description and a drawing of his bird, which leaves no doubt in my mind as to its identity.

nal visitors from other countries, to 744, most of which
rated from North-east Australia or Queensland.

But while not a few new species have been brought to light, we find only one strictly *new genus*—that of *Scenopœus*, belonging to the family of *Bower-builders*, among which may also be included the "Satin bird" *Ptilonorhynchus; Ailurœdus, Chlamydodera* and the "Regent bird" *Sericulus melinus*.

Our knowledge of the range of many species, previously known, only from the locality in which they were first discovered, has been of late years, greatly augmented, by collections made by Messrs. Masters, Spalding, Thorpe, Rainbird, Pettard, and Broadbent; during my own excursions in North East Australia, I was enabled to identify, nearly three hundred species from the vicinity of Rockingham Bay alone, which, from the diversified nature of its Flora, and style of country in general, is perhaps the richest district in Australia; it is the only part of Northern Queensland, the scrubs of which at all approach, to those rich brushes or scrubs of the Richmond River.

Small collections have been recently made at the Gulf of Carpentaria, and surrounding districts, by Messrs. Broadbent, Gulliver, and Inspector Armit; but little or nothing has been added to our knowledge of the avifauna of the interior or North West Coast. One of Mr. Macleay's collectors, Edward Spalding, has done good work at Port Darwin, but as yet I am only aware of one *new species* having been obtained there. From Western Australia, since the publication of Mr. Gould's Hand-book, not a single new species peculiar to that region, has been obtained.

As yet I have not seen the following, but judging from the descriptions alone, given in a newspaper report, of a paper read before the Philosophical Society of Queensland, I regret to say, they appear to me to have been all previously described. Acanthiza flavigaster, *(Diggles)*= Gerygone albogularis, *(Gould)*. Cuculus brisbanensis, *(Diggles)* = *young of* Cuculus optatus, *(Gould)*, (C. canoroides, *Mull*). Lamprococcyx modesta, *(Diggles)* = young *of L. basalis*. Milvus striatus, *(Diggles)* = Henicopernis longicauda, the *Falco longicauda* of Garnot.*

* Mr. Diggles has kindly forwarded me the description and a drawing of his bird, which leaves no doubt in my mind as to its identity.

Eulabeornis griseoventris, Diggles. *Cinnyris aspasiæ*, *Ceyx solitarius*, with *Henicopernis longicauda*, are said to have been obtained near Cape York, but are of doubtful origin. Mr. Cockerell's large collection was made at the Aru Islands, where these species were probably collected. We must have therefore, some more authentic proof of their being obtained on the Australian Continent, before they are admitted into our list of birds; nevertheless it is not improbable that *Henicopernis longicauda*, *Ceyx solitarius*, and *Cinnyris aspasiæ* may yet be found on the Australian Continent, as we have authentic specimens from Port Moresby, on the South Coast of New Guinea; but until we have some further information on this point I do not consider it right that we should admit them as Australian, especially as the only collection in which they have been found, was undoubtedly from the Aru Islands, where these birds are common.

ACANTHIZA BUCHANANI; *Vig. & Horsf. Trans. Linn., Soc. XV., p.* 227.

I have never seen this species, nor can I find any bird answering the description given under this name; no habitat is given with the description.

TRICHOGLOSSUS VERREUXI, *Bp. Rev. et. Mag. Zool.* (1854), *p.* 157. *G. R. Gray, List. Psitt.* (1859), *p.* 61; *Finsch, Papag. II, p.* 846.

This species, if a true species, is certainly not Australian, unless it be a *gage-bird* perhaps of *T. concinnus*, of which I have seen several, variegated with yellow on the breast, neck and back.

EOPSALTRIA MAGNIROSTRIS, *Ramsay.*

Eopsaltria chrysorrhous, Gould; fol. vol. III., pl. 11.

The true E. australis, *Musicapa australis* of Latham, is confined to the South-eastern and South portion of Australia, and may be distinguished by the *dull wax-yellow* of the rump. See P. Z. S., 1868, p. 384. Ann. and Mag. Nat. Hist. (4) IV., pp. 108, 109.

MALURUS LEUCONOTUS, *Gould.* MALURUS CALLAINUS, *Gould.*

The habitat of these species is the interior of South Australia.

AMYTIS MACROURUS, *Gould*, is found in the central portion of Western Australia.

MALURUS AMABILIS, *Gould*, is the adult male, of which ***Malurus hypoleucos***, GOULD, is the young male and the adult female plumage.

In a list of birds from the Gulf of Carpentaria (see *P. L. S. of N. S. W., vol.* IV., *p.* 379), received by Le Comte de Castelnau; a typographical error was made in our remarks on this species, as the context and sense of the passage will show, for the word "female" *young male* should have been written. Our specimen in change of plumage from that of the so-called *M. hypoleucos* to that of *M. amabilis* could not possibly be a female. We have since obtained young birds, said to be females, in the *brown* plumage, characteristic of that sex of this genus; they agree well with the plate of the female given by Mr. Gould in his *Supp. to Bds. of Australia, pl.* 29, but may be the females of a variety of *M. lamberti*, the figure representing the male is that of the *young male* of *M. amabilis*.

PTILOTIS GRACILIS, *Gould.*

Ptilotis notata, Gould, Supp. Bds. Aust., pl. 41.

Notwithstanding Mr. Gould's remarks respecting these species I consider them to be identical with *P. similis*, of MM. Hombron and Jacquinot, a very variable species both in size, and in the extent and shape of the yellow patch on the ear coverts, as well as in the length of the bill, and of the narrow yellow stripe from the angle of the mouth to under the eye; in some of the numerous specimens examined, one from Rockingham Bay, has this stripe almost obsolete; Mr. Gould mentions a specimen of *P. notata* from Dunk Island, which is opposite Rockingham Bay, but I find, that specimens from this district agree so well with the original description of *P. similis* of *Homb. et Jacq. (Voyage au Pôle. Sud., sp.* 46), that there can be no doubt of all three being mere varieties of one and the same species, which will of course retain the name of *Ptilotis similis*. Its range extends from Rockingham Bay, north to New Guinea. The following are the measurements of one of the smaller specimens in the Dobroyde collection. Total length 5·2 in. to tip of bill; bill 0·8, wing 2·7, tail 2·2, tarsi 0·7.

I notice "*? Astur cruentus, Gould*;" has been reported by Salvadori and D'Albertis from New Guinea. This will probably be *A. approximans*, of which there are several stages of plumage, or perhaps it may be a new species. I feel convinced it is not the true *A. cruentus* of *Gould*.

Podargus megacephalus, LATHAM. I have never seen this bird, nor is it to be found in any collections in Australia.

APROSMICTUS INSIGNISSIMUS, *Gould, P.Z.S.*, 1875 *(April), p.* 315.

This is merely a *lus. nat.* of *A. scapulatus* (*cyanopygius*). I have frequently observed patches of yellow feathers in the plumage of this species. When last in the Richmond River district I shot one with a patch of yellow on the abdomen, and another with yellow feathers on the back of the head; there is one now in the Australian Museum with a row of yellow feathers on the upper wing coverts, and another with a yellow tinge pervading the whole of the upper surface. Mr. Shaw, who shot the bird described by Mr. Gould, informed me that it had paired with a female in the ordinary plumage of that sex of *A. scapulatus*.

CACATUA GOFFINI, *Finsch*.

There is no authentic record of this species having been obtained in Australia.

PTILINOPUS (*Lamprotreron*) PORPHYROSTICTUS, *Gould*.

Ann. and Mag. Nat. Hist. (4) 1874, *No.* 74, *p.* 137.

The females of *Ptilinopus superbus* of Temminck, agree exactly with the description of *P. porphyrostictus*, Gould, given in the Annals above quoted. I have also compared and examined a large series of skins of *P. superbus*, in all stages of plumage, from various localities; from Port Denison, Rockingham Bay, Cape York, and Duke of York Island, &c.; the adult females are always alike, but the young of both sexes differ, particularly the young males. After a careful examination of over 200 skins of Ptilinopi from the above-mentioned places, I can find none answering to Mr. Gould's description, which can be separated from the females of Ptilinopus superbus, *Temm.*; if Mr. Gould's bird, then, is really distinct, I can only say, his description fails to point out wherein it differs.

TRIBONYX MORTIERI, *Du Bus.*

Tribonyx gouldii, Sclater, Ann. Mag. Nat. Hist. (3), Vol. xx., p. 123.

Having examined a large series of this species from Tasmania, I can testify that Mr. Gould is perfectly correct in figuring the adult bird *without any white markings* on the *wings;* the immature birds (T. gouldii, *Sclater*) have white tips to the upper and under wing-coverts, but those on the upper coverts at least, are lost in the adult. With respect to the size of this species, I give the following measurements of an adult from Tasmania. Total length 16·8, wing 8·5, tail 4·5, tarsi 3·3, mid-toe without nail 2·9. There is no *authentic* record of the bird being found in Western Australia.

HYPOTÆNIDIA AUSTRALIS, *A. von Pelzeln; Ibis*, 1874, pp. 4, 43.

I regret to say I have no opportunity of consulting the number of the "Ibis" referred to, our copy being imperfect.

ANAS GIBBERIFRONS, *Mull.*

I have never met with this species, although said to have been obtained both in North and South Australia,* which I think very improbable.

I here transcribe Mr. Buller's description for the benefit of our readers, trusting, should any of them meet with the bird in the flesh, they will not fail to record the *full particulars* of its capture in our "Proceedings."

ANAS GIBBERIFRONS, *Mull.*

ANAS GRACILIS, *Buller, Ibis*, 1869, *pp.* 41, 42.

"Upper surface dusky-brown with greenish reflections; the feathers of the back and scapulars narrowly margined with fuscous white; the outer portion of the upper wing-coverts pure white, forming a conspicuous bar across the wing; the secondaries velvety black, narrowly tipped with fulvous, and a speculum of shining green occupying the outer vane of the three middle ones; crown and nape blackish-brown, minutely marked with

* "*Ibis*," 1869, *Note pp.* 42, 380; *also* 1870, *p.* 459.

fulvous-white; throat, fore neck, and sides of the head fulvous-white, the latter marked with saggitate spots of brown; under parts light fulvous-brown, with obscure spots of a darker shade, especially on the breast and sides, each feather having a broad, central mark of blackish-brown; throat and abdomen more or less tinged with bright ferrugineous; bill dark brown, outer portion of the lower mandible, yellow; feet, pale brown."

"Length, 17 inches; expanse, 25·5; wing from flexure, 8; tail, 4; tarsi, 1·25; middle toe and claw, 1·75; bill, along the ridge, 1·5; along the edge of lower mandible, 1·75.

♀ Length, 15·5; expanse, 23·5; wing from flexure, 7·5; tail, 3·5."

TRINGA CANUTA, *Linn.*

Of this species I have examined three Australian shot individuals, two from Wide Bay, and one from Victoria; several others were reported to me, as having been observed in the Melbourne markets, along with *Chladorhynchus pectoralis* and other scarce species.

HYDROCHELIDON LEUCOPTERA *Meisner & Schinz.*

Mr. Howard Saunders states (P. Z. S., 1876, p. 642), that this species has been obtained in Australia and New Zealand, but does not give any localities.

I have never seen, or heard of the bird being found, on our coasts, and should be glad of more definite information on the subject.

The bird which I refer to (sp. 681) as *Sterna dougalli*, agrees well with Mr. Gould's figure of *S. gracilis*, but has a longer tail and the *whole* of the bill *jet black*, even to the very base.

For corrections in the nomenclature I am indebted to valuable papers by the following gentlemen: Messrs. R. B. Sharpe (*Hawks and Owls*), J. E. Harting (*Plovers*), Howard Saunders (*Terns*), and to the following works: Sharpe's Catalogues of "*Accipitres*" and "*Striges*," Dr. Finsch's "*Die Papageien*," The

"Ibis," Proceedings and Transactions of Zool. Soc., London, and the Transactions of the Linnean Soc., London. Our copies of the last three works however, I regret to say, are more or less imperfect, and in that of the "Ibis" large gaps appear, so that any corrections which my scientific friends may point out, will be very thankfully received.

With respect to the localities and distribution of the species, notwithstanding Mr. Gould's great work, they have been compiled chiefly from my own notes and those of Mr. George Masters, Curator of the Macleayan Museum, who has collected largely in nearly all parts of Australia. Mr. F. G. Waterhouse, Curator of the Adelaide Museum, has also kindly furnished me with data on Central Australian birds, and several rare species for examination. I may mention that out of the 744 species enumerated in this list, 725 have been personally examined by me; of the remaining 19, five at least are varieties only, or doubtful species, the rest, chiefly *Procellaridæ*, I have had no opportunity of examining; their names, and the localities given, are for the most part taken from Mr. Gould's Handbook.

Since the foregoing list has been printed off, Mr. Masters informs me that he has received from Port Darwin, a fine new species of *Cracticus*, allied to *C. quoyi*, but having a larger and stronger bill, the description of this species, which has been named after its discoverer *Cracticus spaldingi*, will be published in the next number of the Society's Proceedings. This brings the number of recognised Australian species to 745.

Finding it necessary to separate the yellow-breasted *Pachycephala* of Western Australia from those of New South Wales, I embrace the present opportunity of stating my reasons for so doing, and of pointing out the differences between these two species.

While lately examining a large series of *Pachycephala* from various parts of Australia, my attention was drawn by Mr. Masters

to the deep rufous tint, on the under surface of the females of the Western examples, of the so-called *P. gutturalis;* and after comparing a very large number of specimens from both New South Wales, and Western Australia, I have come to the conclusion that although closely allied, they are specifically distinct. Mr. Gould's description, and the plate of the *P. gutturalis* in his work, have evidently been taken from Western examples, from which the *Turdus gutturalis* of Latham may be easily distinguished.

PACHYCEPHALA OCCIDENTALIS, *sp. nov.*

Pachycephala gutturalis; *Gould Bds. of Australia, fol. Vol. II. pl.* 64; *id. Handbook, Birds Australia, I. p.* 207.

Adult male. Like *Pachycephala gutturalis*, Lath., but distinct, in having the *tail grey without* any wash of olive on the margins of the basal portion of the feathers, the blackish subterminal band, in width less than one-third of the total length; the yellow neck band very indistinct, or broken on the back of the neck, the olive of the upper surface of a more greenish tint, and the yellow of the under surface slightly paler.

Adult female. Like that sex of *P. gutturalis*, Lath., but having the lower part of the chest, flanks, the abdomen, and under tail coverts rufous-buff, under wing coverts light rufous-buff.

Sexes alike in size; total length 6·4 in., wing 3·55 in., tail 3·1 in., tarsi 0·9 in., bill from forehead 0·6 in.

In the *Pachycephala gutturalis*, Lath. of N. S. Wales, the male has the *basal half of the tail grey, and always washed with olive*, of the same tint as the back, and the subterminal blackish band extends towards the base for at least *one-half* of the total length; the yellow neck-band is *well-defined* on the back of the neck. In the females the lower part of the chest is ashy grey, becoming *white on the abdomen* and under tail- and wing-coverts. These differences will at once serve to distinguish the two species.

On some new *Carabidæ* from Port Darwin,

By WILLIAM MACLEAY, F.L.S.

By the Netherlands East Indian Company's steamer "William Mackinnon," which arrived here from Batavia about a week ago, I received from Mr. Spalding a large and valuable collection of Mammals, Birds, Reptiles, Fishes, Mollusks, Crustacea, Insects, and other animals, both terrestrial and marine, from Port Darwin, the capital of the South Australian Province of North Australia.

The collection is extremely interesting, both in a zoological and geographical point of view, and will probably form the subject of various Papers to be read before this Society.

I propose to undertake, on my own part, an account of the Fishes, Lizards, and Snakes, but want of time makes me limit myself in the present Paper to a short notice of the Coleoptera in the collection belonging to the Family *Carabidæ*. I select this Family, not only because it is to me the most interesting, but because it is of all the Coleoptera the best represented in the collection. There are 23 species of ground *Carabidæ* alone, a number most remarkable, when we consider the almost entire absence of them at Cape York and the Islands of Torres Straits.

But the chief attraction to me in this Port Darwin collection is that it makes me acquainted with several rare and beautiful things, described nearly 40 years ago, by Hope and Westwood as coming from Port Essington. The government station, formed there many years ago, has been long since abandoned, and there seemed very little probability of again coming across any of the very interesting Insects described from that locality. Port Darwin, however, though 150 miles south-west of the old settlement, seems to have a Fauna of a very similar character; at all events, I can recognise in the present collection some very remarkable and conspicuous insects, which I never thought it would be my good fortune to possess.

Among the *Carabidæ* I would particularize *Carenum sumptuosum*, Westwood, the most gorgeously beautiful of a very beautiful group

of the *Scaritidae*, and *Delinius Essingtoni* a very curious form of the *Feronidae* described by Westwood in the Proceedings of the Entomological Society of London for 1864, p. 3.

The following appear to me to be new:—

CARENUM DARWINIENSE.

This species belongs to the group of which *C. Spencei* is the type—a group now so numerous that it may well be formed into a separate genus, characterized by short moniliform antennæ, slightly securiform palpi, tridentate anterior tibiæ, and foveated elytra. This last character is so strongly marked in all of the species that I would suggest for the genus the name of *Laccopterum*.

I have only one specimen; it is seven lines long, of a subnitid coppery red on the elytra, thorax, and back part of the head, metallic green on the epipleuræ, and black everywhere else. The head is broad and flat, and the facial grooves are deep and curved outwards both before and behind. The thorax is a little broader than the head, and is broader than long, with the posterior angles rounded, and a short broad recurved lobe in the middle of the base; the median line and the depression near each posterior angle are well marked. The elytra are moderately convex and slightly narrower than the thorax, with seven punctured striæ on each elytron, and large foveæ on four alternate interstices, these foveæ are most numerous in the sutural, and least so in the fourth row, the other interstices are narrower and subcostate. There is a dense row of punctures on the lateral margin, and the epipleura, which is deep, is roughly punctured. The legs are moderately robust, and there are three teeth on the outside of the anterior tibiæ, the upper one small.

When I first saw this insect I fancied it might be the *C. Gemmatum* of Westwood, a species I had never seen, but which, like *C. Sumptuosum*, had been described as coming from Port Essington. I find, however, that beyond belonging to the same group there is little similarity between them.

CARENIDIUM SPALDINGII.

Fourteen lines long and of convex form. The head in front, the disk of the thorax, and a large patch in the centre of the elytra

are black, the remainder of the upper surface is of a golden green and very nitid, and the under surface is black with a tendency to piceous on the tarsi, antennæ, and palpi. The head is large and rather flat, the facial grooves are deep and diverge much behind, and the labrum is short, broad, crescent-shaped, and marked in front with six setigerous punctures. The thorax is slightly broader than the head, and much broader than long, broadly rounded at the sides and posterior angles, and truncate at the middle of the base, the median line is lightly marked, and the depressions near the posterior angles are rounded and shallow. The elytra are of an elongated oval form, scarcely so wide as the widest part of the thorax, and marked with seven shallow punctured striæ, and with a row of sub-distant larger punctures in each lateral margin. At the base of each elytron there is a depression marked with seven punctures in two obliquely transverse series—five in one and two in the other. The legs are rather slight for the genus. The fore tibiæ are armed externally with two strong teeth, the intermediate tibiæ are without external spine.

I have named this handsome species after the very excellent collector who discovered it—Mr. Edward Spalding.

CORONACANTHUS. New genus.

Mentum three lobed, the middle one shorter than the two others and bilobed at the apex, the sides of the lateral lobes converging towards the base.

Palpi, rather elongate—the maxillary with the terminal joint truncate, slightly trigonal, and of the same size as the third—the labial with the terminal joint truncate and trigonal.

Mandibles, rather short and stout, and slightly toothed in the middle.

Labrum as in *Feronia*.

Antennæ of moderate length, slender and filiform; the third joint very slightly longer than the others.

Labrum square; slightly emarginate in front.

Legs moderately robust; the fore tibiæ strong and armed on the inner apex, with a stout pointed curved spine, and with the emargination on the inner side rather small; three joints of the tarsi of the male dilated.

Body apterous, sub-elongate, and convex, separated from the thorax by a peduncle.

Prosternum, flat between the coxæ, extending a little backwards and without margin.

CORONACANTHUS SULCATUS.

Of rather elongate form, about ten lines in length, and of a nitid black colour, with the sides of the thorax and elytra golden green, and the antennæ, palpi, and tarsi piceous.

The head is smooth, without facial grooves, of moderate size and not narrowed into a neck behind. The thorax is rather longer than the width, rounded at the sides and base, and very deeply and largely impressed near the posterior angles, which have a broad recurved margin.

The elytra are each marked with three deep smooth striæ, the space between the first and second being twice the width of the other interspaces, rather convex, and having an impressed puncture on its outer side not far from the apex. There are two rows of large punctures on each lateral margin, the outer one not continuous to the apex.

I have received a number of specimens of this remarkable and beautiful insect from Port Darwin. It seems curious that a beetle, apparently so abundant, should have hitherto escaped observation, but I have searched in vain for any notice of it in any publication of recent date.

I have named the genus from the curved form of the spine at the inner apex of the fore tibiæ.

COPTOCARPUS PLANIPENNIS.

This insect very closely resembles *C. Riverinæ*, a species described by me a few years ago in Vol. II., p. 329 of the Proceedings of the Entomological Society of New South Wales. It

is, however, of a more elongate and flat form, less distinctly striated on the elytra, and much less spinose on the legs. The colour is black with the tarsi, antennæ, and palpi reddish; the length is seven lines; the head and thorax are without mark or impression of any kind—a faint median line on the thorax excepted; the elytra are very faintly striated; the scutellar stria is about three times the length of the scutellum and is very finely punctate, and there is an impressed puncture on the inside of the second interstice of each elytron just behind the middle; the fore tarsi of the male have the three first joints strongly dilated, the third joint being the longest; the hind tibiæ and tarsi are long and slender.

The other *Carabidæ* in the collection are *Catadromus Australis* a species seemingly universally distributed throughout New Holland. *Cratogaster sulcata* Blanch; two species of *Pheropsophus*, one of them probably new; four species of *Chlænius*, all well known; a *Pœcilus*; an *Omaseus*; and five *Harpali*, one of them perhaps, *H. interstitialis*, described by me from Port Denison many years ago, but seemingly a larger and more brilliant insect.

But I must postpone, from want of time, the identification and description of these and the many other interesting things in the collection until some future Meeting of the Society.

EXHIBITS.

The Secretary exhibited a photograph of an Australian Native belonging to a peculiar tribe, entirely destitute of hair, and of a bright copper color, from a district near the Balonne.

MONDAY, SEPTEMBER 24TH, 1877.

W. J. STEPHENS, ESQ., M.A., President, in the Chair.

DONATIONS.

From MR. J. BRAZIER, C.M.Z.S. Synonomy of, and Remarks upon Tasmanian and other Shells, with their Geographical distribution.

From R. TATE, ESQ., F.G.S. Belemnites and Saleina, from S. Australia.

From Royal Society of N. S. W. The Rules, etc.

From Dublin Museum Biological Society. Vol. I, No. 2, of its Proceedings.

From Societe Ent. de Belgique. Serie II., No. 40, of its Compte Rendu.

From F. M. BAILEY, ESQ., Queensland. Handbook of Ferns of Queensland.

Also, 1 Packet of the Seed of Anthisteria membranacea (Lindley) *Landsborough's Grass.* Locality, N. Queensland, but thrives well in cooler districts. Very superior for pasture or hay.

2. Packet of the Seed of Danthonia elymoides (F. v. M.) *Mitchell's Grass.* Locality, Barcoo River. One of the finest pasture grasses of Queensland.

PAPERS READ.

Notes on a Collection of Snakes from Port Darwin,

By William Macleay, F.L.S.

Among the many interesting and valuable things collected at Port Darwin by Mr. Spalding, not the least interesting to me are the Snakes. I have received of them about 30 good specimens, belonging to at least 12 distinct species. Some are of wide distribution and well known, or at all events well known to me—such as *Morelia variegata*, *Tropidonotus picturatus*, *Dipsas fusca*, and *Diemenia olivacea*. The first of these is found everywhere throughout New Holland, the second all over Northern Queensland (a very variable species), the third also throughout the whole of tropical Australia, and of the last I had previously seen several specimens from the Endeavour River. Others are, though described, very rare and in few collections, and were until a few days ago, only known to me by their descriptions. These are *Nardoa Gilbertii*, two fine specimens, *Cerberus Australis*, also two specimens varying very much in colour, and *Pseudonaja nuchalis*. Of this last I have only one specimen. It is of a lightish colour, but distinctly banded. There are 201 abdominal shields and 62-62 sub-caudals. Some specimens in the Australian Museum, labelled *P. nuchalis* by the late Curator, belong evidently to the other species *P. affinis*, Gunther, Ann. and Mag. Nat. Hist., 1872, ser. 4, vol. ix., p. 35, pl. iv., fig. c.

The species which appear to me to be new are as follow :—

Fordonia variabilis.

In the form and disposition of the head shields and the numbers of the scales and abdominal and sub-caudal shields, the three specimens which I have received from Port Darwin agree exactly with the description given by Dumeril and Bibron (Hist. Nat. de Rept., vol. 7, p. 884) of a species from Timor—*Fordonia leucobalia* Schlegel—the genus *Hemiodontus* Dum. and Bibr.

I can scarcely doubt however that they are of distinct species. Curiously enough Dumeril and Bibron describe three specimens of the Timor snake, all differing very widely in coloration, and I find exactly the same number of varieties in the Australian one.

1*st specimen.*—White above and below, with occasional black scales, abdominal shields 144; anal large and bifid; sub-caudals 30 (some entire.) Total length 2 feet 6 inches, tail $3\frac{1}{2}$ inches, diameter of body (widest part) $1\frac{1}{2}$ inches, scales in 25 rows.

2*nd specimen.*—Black with sides and belly white spotted with black, abdominal shields 148; anal large, bifid; sub-caudals 30, a few entire; scales in 25 rows. Total length 2 feet 7 inches, tail $3\frac{1}{4}$ inches, diameter of body $1\frac{1}{4}$ inches.

3*rd specimen.*—The whole upper surface black, the sides and belly white, a straight line of demarcation between the two colours; abdominal shields 145; anal large, bifid; sub-caudals 26, nearly all bifid; scales in 25 rows. Total length 2 feet 4 inches, tail $3\frac{1}{2}$ inches, diameter of body 1 inch.

DENDROPHIS OLIVACEA.

Abdominal shields 214, sub-caudals 130-130, scales in 13 rows. Total length 4 feet, tail 14 inches, head 1 inch.

Of very elongate form, head narrow but broader than the neck and very flat, loreal shield nearly twice as long as the height, head and neck above very dark brown or black, the upper labials yellow; all the rest of the upper surface of a pale olive brown, beneath greenish white.

The collection contains several specimens of this species at various stages of their growth.

PSEUDECHIS DARWINIENSIS.

Of more elongate form than *P. porphyriacus*. Head shields much the same as in that species, but the vertical is quite as broad as long, and much wider than the superciliaries. Scales smooth, oval, in 17 rows. Abdominal shields 212, sub-caudals $49\frac{1}{15}$. Total length 3 feet, tail $5\frac{1}{2}$ inches. The upper surface of the head is pale brown, and that of the body and tail reddish brown, the middle of each scale being of a lighter colour than the apex. The whole under surface is of an uniform yellowish white.

I received only one specimen of this Snake. It differs very much from *P. porphyriacus and Australis*, the only two species of the genus mentioned in Krefft's Snakes of Australia, but another species under the name of *scutellatus* has been described by Peters in the "Ak. Wiss. Berl. 1867, p. 710" as coming from Rockhampton. As I have never seen the last mentioned species, nor even a description of it, I cannot of course be certain that it is not identical with the one now described from Port Darwin.

BRACHYSOMA SIMILE.

Not unlike *B. diadema*. Body more enlarged towards the middle, ventral shields flatter and more angled at each side; vertical shields more elongate and perfectly triangular. Scales in 15 rows, abdominal shields 180, sub-caudals 54-54. Total length 16 inches, tail 3 inches; the front of the head as far as the middle of the occipital shields is black, and there is a black bar on the nape of the neck; with these exceptions, the entire upper surface is of a pale yellow, with the lateral margin of each scale of a reddish brown, giving the appearance of 13 narrow undulating longitudinal stripes. The under surface is entirely pale yellow.

ELAPOCEPHALUS.—New genus.

Body elongate, slender, cylindric. Tail rather long, slight, and tapering to a very fine point. Head high, and broader than neck, with short round muzzle. Eyes large, pupil round. Head shields as in *Elaps*. Scales smooth, in 15 rows. Anal shield entire. Sub-caudals in two rows. Fangs and poison glands large for the size.

The large eye and elongate tail separate this genus from *Elaps*. The plan of the head shields is exactly as in that genus, hence the name.

ELAPOCEPHALUS ORNATICEPS.

Head brown, each shield beautifully marked with variously shaped white margined black patches; on the nape, and for a short distance on each side of the neck, there is a collar of a deep sulphur orange hue. The whole upper surface of the body

and tail is of a pale slate colour, the apical half of each scale having a red tinge. The under surface is of a slatey white, excepting the head and neck which are barred and spotted with black, and the extremity of the tail which is yellow. Abdominal shields 187. Sub-caudals 90-90. Total length 10 inches, tail $2\frac{1}{2}$ inches, head 5 lines.

I have only one specimen of this very beautiful snake. It is very small and slender, and yet I think it is full-grown. The depth of its head and its lurid orange mantle give it a most formidable and venomous appearance, and the comparatively large size of the fangs and poison gland would lead to the belief that the appearance is not deceptive.

The collection contains also two specimens of a *Morelia* of small size and reddish brown colour, with brown bands, which I cannot believe to be young specimens of *M. variegata*, but until I have seen more specimens at various stages of their growth, I will not attempt to characterise them as a species.

Description of a species of *Edoliosoma* from New Ireland, supposed to be the adult of Ceblepyris schisticeps (*Homb. et Jacq.*)

By E. P. Ramsay, F.L.S., &c., &c.

Edoliosoma schisticeps.

Ceblepyris schisticeps, Homb. et Jacq., Voy. au Pole Sud., pl. X., fig. 1, *juv.*

Adult male.—Forehead, crown of the head, nape and upper part of the neck shining lead-blue, lower part of the back of the neck brown, tinged with the same color, back and scapularies brown tinged with rufous, becoming deeper in tint on the rump and upper tail-coverts, which are light rufous or chestnut brown; wings blackish-brown, the upper-coverts and secondaries broadly, and the primaries narrowly, margined on the outer webs with chestnut; tail feathers obscure reddish-brown, almost blackish at the

base, the two centre feathers reddish brown, all tipped and margined with light chestnut, the outer ones to a greater extent than the inner, and having their outer webs all chestnut; the throat and the whole of the under surface of the body, under wing- and tail-coverts light chestnut, the wing feathers below broadly margined with the same tint on their inner webs, but towards the base only on the primaries; lores black, sides of the head and ear-coverts light chestnut margined with lead-blue, remains of a faint line of buff over the eye, but not extending beyond it; eyelashes buff. Total length 9·5; wing 4·7, tail 4·4, tarsus 0·9; bill from forehead 1 inch, from nostril 0·7, from gape 1·1; bill, legs and feet, black.

Female.—The female differs only in being of a much lighter tint on the under surface, and duller above, and in having a well defined line of buff extending from the nostril above the lores and eyes to the back of the head; the ear-coverts are washed with buff.

Young male.—Of those specimens apparently young males, the under surface is nearly as dark as the adult male above described; one has the throat and whole of the under surface of the body barred with transverse wavy lines of blackish, generally two lines on each feather; in another more adult these lines are reduced to triangular shaped dots. The under mandible horn-brown at the base, the upper blackish, the legs and feet are of a bluish-grey. The measurements are about the same in all the specimens, the tail in one, being only 4·5 inches.

This is I believe the *Ceblepyris schisticeps* of Hombron and Jacquinot (*Voyage au Pole Sud., pl. X., fig.* 1), and my only excuse for redescribing it here is, that the *young only* was previously known. Dr. P. L. Sclater refers to a specimen ("Edoliosoma, sp. inc. ♀"), in his notes on Mr. Brown's collection from New Ireland (P. Z. S., 1877, p. 101), but if I remember rightly this was a young of the present species.

Hab. Duke of York Islands and New Ireland.

I trust the above descriptions, taken from a fine series in the Australian Museum, will prove of some use to Ornithologists.

The specimens in our Museum, I selected from the large collection made by the Rev. George Brown and Mr. Cockerell, in New Ireland, and the adjacent Islands.

Description of a new species of *Pachycephala* from the Gulf of Carpentaria.

By E. P. Ramsay, F.L.S., &c., &c.

Pachycephala pallida, *sp. nov.*

Adult male.—All the upper surface dull slate-grey, lighter on the upper tail-coverts, and base of the outer webs of the tail feathers; the wings and tail feathers blackish brown, margined with ashy white, a little broader on the secondaries and upper wing-coverts, the feathers of the crown of the head and forehead with a narrow line of a blackish brown down the centre; throat to the chest white; lower portion of the ear-coverts a line down the side of the neck, joining a narrow band of the same color across the chest, black; remainder of the under surface white, faintly tinged with light cream color.

The female is the same in plumage above, as the male, with a faint tinge of olive; under surface white, washed with a light creamy tint on the breast and sides; all the throat, sides of the face from the angle of the mouth, the chest, breast and flanks, strongly striated down the centre of the feathers with blackish brown, under tail-coverts white with a narrow line of brown down the centre of each feather. Both sexes are of the same dimensions. Total length 5·5 inches; wing, 3·5 inches; tail, 2·8 inches; tarsus, 0·8 inch; bill, from forehead, 0·5 inch; from nostrils, 0·35 inch; from gape, 0·7 inch.

This species is undoubtedly closely allied to *P. falcata* of Gould; it is, however, slightly smaller, and wants the rufous under surface of that species, and may at once be distinguished from it by having the *pectoral band extending upwards to the base of, and joined to, the ear-coverts*, which Mr. Gould distinctly states is not the case in his *P. falcata*.

Habitat. Gulf of Carpentaria and Southward to George Town.

AUSTRALIAN FISHES.

New or little known Species.

By Count F. De Castelnau.

Plates II. and III.

The Paper that I present to the Linnean Society of New South Wales contains the description of a number of Australian Fishes, which appear to me to be either little known or entirely new to science. It forms a succession to those I have published in the proceedings of the Zoological and Acclimatisation Society of Victoria for the years 1872 and 1873, and also in the Essays contained in the official reports of the Victorian Intercolonial Exhibitions for 1873 and 1876.

Beryx affinis.

Beryx affinis, Gunther Catal., vol. 1, page 13.

Height of body, twice and a quarter in total length without the caudal; head, twice and three-quarters in the same, eye nearly one-third of the length of the head, præopercule, with a rather strong flat spine at its inferior angle; the lower limb finely serrated; the interopercule is strongly denticulated on its lower angle, and is finely serrated at its lower margin; operculum has three strong spines, and its margin is serrated.

The dorsal fin is low at its anterior part, very high towards its centre, and from thence becomes shorter to its extremity; it has seven spines and twelve rays; the first ray is the highest; this dorsal fin is long, and begins on a line perpendicular to the centre of the base of the pectoral; caudal very strongly forked; its inferior lobe considerably shorter than its upper one; anal formed of four spines and twelve rays; ventrals with one strong spine and seven rays, pectorals with thirteen rays.

Lateral line straight with six scales above and twelve below; it extends over about forty-three scales.

The general colour is of a most beautiful pink, with silver stripes on the body, the edges of the opercules of the last colour.

This fish is known in Sydney under the specific name of "*Nanegai;* its usual length is about twelve inches, but some specimens attain twice that length; it appears towards the middle of October, and lasts for about two months; it is highly esteemed for the table. It is with doubt that I describe it as *affinis*, as, on about two hundred specimens I have seen, nearly all had the inferior lobe of the caudal much shorter than the upper one; two or three specimens only had the two lobes of equal length.

APOGONICHTHYS ADSPERSUS.

Height of body contained three times in total length of fish with the caudal; head twice and two-thirds in the same; first dorsal formed of six spines; the first very short, the second thickest of all, but not quite so long as the following: 2nd dorsal with one spine and nine rays; caudal truncated; anal with two spines (the 1st very short) and eight rays; the lateral line extends over thirty scales.

The specimen preserved in liquor, seems to have been reddish, and marked with irregular small brownish spots on most of the scales; belly white; it is four and a-half inches long; and is from Rockhampton, where it bears the name of "*Stinker.*"

THERAPON HILLII.

Teeth small, very numerous, villiform; no canines; a transverse line of teeth on the palate; opercule with two spines, præopercule having its limb entirely and equally serrated; the head is rather pointed; the back straight; the height is contained three times in the length without the caudal; the head is three times and two-thirds in the same, and the diameter of the eye a little over four times and a-half in the length of the head; five series of scales on the cheeks; opercule covered with scales similar to the last, and much smaller than those of the body, these numbering sixty-one on the lateral line without counting five or six small ones on the base of the caudal; this line passes over the 12th, and nearly twice as many extend below on the transverse line, but the inferior ones are very small; all these

scales are ciliated on their edge; dorsal having a very long spinous portion composed of thirteen rays and a much shorter soft one having eleven rays; the dorsal fin is received in a sulcate of the back; caudal large, forked, scaley at its base and on the membranes between the rays on two-thirds of their length; it has seventeen long rays; anal formed of three large spines, the first of which is the shortest, and the two others about equal in length, but the second much thicker than the others; it has ten rays; the ventrals are very large, being more than two-thirds of the length of the head; the pectorals smaller, of sixteen rays.

The specimen preserved in spirits is uniformly of a dark yellowish colour; a rather large rounded black spot is seen on the opercule near its upper spine, and seven or eight similar ones are dispersed on the back and sides of the body; they are very distant one from the other; the specimen is twelve inches long, and comes from Taroom on the upper Dawson River; it is entirely a fresh water fish. I have dedicated it to Mr. Hill, the able Director of the Brisbane Botanical Gardens.

THERAPON TERRÆ-REGINÆ.

The height of the body is twice and a half in the total length without the caudal, and is equal to the length of the head; the snout is shorter than the diameter of the eye; præoperculum rounded, and having a line of strong acute spines, becoming larger on the rounded part, but disappearing on the lower edge; operculum with two spines, the lower one very acute; dorsal with twelve spines, of which the two first are much shorter than the third, and the fourth is the longest; soft dorsal of nine rays; caudal bifurcated; anal with three spines of which the middle one is much larger than the others; it has eight rays at its soft part; cheeks with five series of scales, the lateral line extends over forty-five of them.

The specimen is in liquor, and seems to have been entirely silvery; there is the appearance of four narrow transverse bands which do not extend to the belly; the fins have probably been

red, and have no trace of spots or bands. The specimen is two and a half inches long, and was taken in a river in the northern part of Queensland—probably the Fitzroy.

Note.—I have seen a specimen of this sort belonging to the Brisbane Museum, six inches long, from the above-named river. I had taken it for *fasciatus*, but it is certainly distinct, and I believe this latter is confined to the Western Coast of Australia.

Diacopus superbus.

The superior profile of this sort is strongly convex, and the body broad; the height is twice and three quarters in the total length without the caudal fin; the head is twice and a-half in the same; the eye is contained four times and one quarter in the length of the head; at the upper jaw there is in front on each side a very large canine, and on the lower one six or seven of different sizes; the notch of the præopercule is very distinct, and receives a slight knob of the interopercules; below this notch are several arched spines directed forward; the operculum ends in a point; the body scales are large.

The first dorsal has ten strong spines, of which the 4th is the longest; caudal truncate; anal with three spines and eight rays, the 1st spine is straight and short; the 2nd, very large, arched and thick; the 3rd, very little longer than the second, rather arched and slender; the 2nd, 3rd, and 4th rays are the longest; pectorals of seventeen rays; the ventrals are far from reaching the base of the anal.

This beautiful fish is brown on the back, with the centre of each scale obscure; the lower parts are of a handsome pink colour; dorsal, caudal and anal of a brilliant scarlet. Pectorals and ventrals pink.

My specimen is twenty inches long, but it is said to attain a larger size.

This fish inhabits Moreton Bay, and is called at Brisbane, Red Bass; it is said to be a very good table fish.

The general form is very much like Lesson's figure of *Diacopus Tiea* (Voyage Duperrey, pl. 23), but the form of the caudal and of the spines of the anal and other characters do not allow me to unite the two sorts.

Centropogon robustus.

Centropogon robustus (Gunther Cat., vol. 2, p. 128.)

This sort is very nearly allied to *C. australis*, but is easily distinguished by the pectorals which do not extend to the vent and the dorsal spines of which the 4th and 5th are the longest. Dr. Gunther is quite right in supposing that there is no cleft behind the fourth gill. I have little to add to his excellent description; the colours are very similar to those of *australis*.

The specimen, preserved in liquor, is eight inches long, and is from the Brisbane River.

Beridia.

This new genus belongs to the *Triglidæ*, and its spinous dorsal being rather less developed in length than the soft, ought probably to be placed in the group *Cottina*, but the general form is very different from all the other fishes of *Triglidæ*, and is more like some sorts of *Gobiidæ*.

Head and body very compressed; general form oval; head very large, with its anterior profile strongly concave in front of the eyes, and convex below; teeth very numerous, very small, granular; none at the lower jaw nor on the palate; two dorsals well developed, the first not quite as long as the second, of eight spines, the second with three spines; caudal very long; anal large, with one spine; ventrals behind the pectorals; pectorals large, with the upper ray branched and all the others simple.

Beridia flava.

Plate II.

Head contained twice and one-third in the total length without the caudal fin; lower jaw longer than the upper one; eyes moderate, being five times and a half in the length of the

head; head, body, and all the membranes of the fins covered with very minute scales having the form of small tubercles; opercules very much prolonged over the insertion of the pectorals, and ended by two smooth points; maxillaries not extending as far as the anterior margin of the eyes; the body concave behind the first dorsal; this fin is inserted over the eyes and is formed of seven spines, of which the third and fourth are the longest, the others decreasing in length; the space between the first and the second dorsal does not exceed the diameter of the eyes; the length of this first fin is once and three-quarters in the length of the head, and it is about as high as long; the second dorsal is formed of three spines and ten strong rays; these extend rather further than their membranes, and are higher than the spinous dorsal; this fin is about one-fifth longer than the first, and has a posterior membrane which almost unites it to the base of the caudal; this latter is as long as the first dorsal and formed of twelve long rays rather prolonged, the second being branched, and the two lateral ones shorter than the others; it is truncated, and there is also a supplementary very short fin on each side; the anal fin is similar to the second dorsal—it is formed of two spines and eight rays; the ventrals are large, inserted one near the other, and formed of one spine and five rays; the pectorals are very large, nearly as long as the head, with one upper branched ray and nine simple ones; these rays are thick and rather prolonged; the lateral line is continuous, follows the back, and is bent downwards over the end of the pectoral; the total length of the fish is about seven and a half inches long; it is entirely of a beautiful orange colour; the external part of the fins seem to have been rather obscure.

This specimen was found in Portland Bay, on the Western Coast of the Colony of Victoria. Having received it in a dry state, I put it in warm water to extend some parts of the fins; the water became almost immediately of the same beautiful yellow colour as the fish.

PATÆCUS MACULATUS.

Patæcus maculatus, Gunth. Catal., vol. III., p. 292.

I believe this sort to be Dr. Gunther's species, but it presents some slight differences.

The general form seems exactly the same, but the dorsal is not perfectly continuous, there being a rather strong notch at the insertion of the caudal; there are a few very small scattered tubercles on the cheeks and opercules, and a series of flat warts forming a line on the lower part of the body; the body is flesh colour with the head yellow—the latter in its greater part covered with irregular brown marmorated spots; on the body these spots are rounded and not so numerous; the fins are dark brown with a few transverse flesh colour narrow lines especially on the dorsal; pectoral in great part brown, spotted and bordered with flesh colour.

Total length of specimen, three and a half inches.

This most interesting fish was sent to me by Mr. Yagoe from St. Vincent's Gulf. Dr. Gunther, who has only seen one single specimen says first, that it came from North Australia, and afterwards from Fremantle. It is probable the last locality is the correct one.

PERIOPTHALMUS KOELREUTERI?

Ventrals united; height of body contained five times and one-third in the total length without the caudal, head three and two-thirds in the same; first dorsal with thirteen rays, none produced; colour, in liquor, very dark; sides of the head with white dots, which may have been blue on the living specimen; four rather broad black bands on the body which do not generally extend below the lateral line; fins marmorated with black and yellow.

The specimen is only a little over two inches long, and comes from the sea at the entrance of the Brisbane River.

Dr. Gunther unites many of the author's sorts under this name, but I believe he goes too far in this way. The present specimen would, I believe, belong to Dr. Bleecker's *Periopthalmus dipus*.

SILLAGO TERRÆ-REGINÆ.

The fish I here describe is very different from *punctata* and *maculata* by its uniform colour; it cannot be united with *ciliata* on account of its præoperculum being absolutely entire. I thought it might be *Burrus* of Richardson, Ann. and Mag. of Nat. History, vol. IX., p. 128, but this is said to be spotted like *maculata*, and that the head is one-third of the total length without the caudal. This *burrus* is only known by a drawing, and Dr. Gunther has very properly neglected it in his catalogue. I am inclined to believe that it is simply *maculata*, as it appears principally to differ from this by the absence of the longitudinal streak which may have been forgotten by the draftsman. *S. bassinus* is, as I have already said, probably a variety of *punctata*. Height of body contained a little less than four times in total length without the caudal fin; head three times and one-third in the same; diameter of the eye four times and a half in the length of the head, and twice in the snout; the space between the eyes is one-half the length of the snout; præopercule entire without spines or teeth of any sort; operculum terminated by a strong spine; the lateral line extends over sixty-four scales; first dorsal of ten rays, the third being the longest; second dorsal with one spine and eighteen rays; the caudal very slightly concave; anal with two spines and fifteen rays. The fish is silvery with the upper parts greenish; on the body some very feeble transverse dark bands that disappear on the dried specimen.

This fish is called *Whiting* at Brisbane, and is caught in large numbers in Moreton Bay. Its flesh is, as usual, in this genus, very savoury. The average size of the adult specimen is about twelve inches.

SCIÆNA AQUILA?

The *Sciæna aquila* is one of the European fishes that have been most particularly studied—a sort from the Cape of Good Hope named *hololepidota*, by Lacepede and Cuvier, and *Capensis* by Smith, seems not to differ from it. When I published my first paper on Australian fishes in the Proceedings of the

Zoological Society of Victoria for 1872, I found that a large Australian sort, called King Fish, was very nearly allied to it, but having no specimen of the European sort to compare it with, I was led by the study of the best Ichthyological Works to consider it as different. Even on studying Dr. Gunther's Work I was led to doubt if it belonged to the genus.

Since, Professor McCoy has told me that he had compared the Victorian Fish with a specimen of *aquila* in the Melbourne Museum and that he could find no difference between them; the Victorian sort is always very scarce, and I had only seen two specimens of it in six years; both were of very large size.

During a late stay at Brisbane, Queensland, I was astonished to find that a *Sciæna* was amongst the most common fishes of Moreton Bay, and is considered the best edible fish of the country. It is called *Dew-fish*, on account of its beautiful silvery grey colour; the lower parts are white, the first dorsal obscure; the second with a yellow tinge; the caudal dark; ventrals and inside of the mouth, orange colour; pectorals yellow, with their extremity obscure; a black spot at the base of the pectorals It attains the weight of fifty pounds. During my stay in the months of June and July, numerous specimens of all sizes were caught every day; the great majority were of a foot long, or even less; the præopercule is slightly denticulated.

The colours, and particularly the one of the inside of the mouth, make me doubt of the identity of this fish with *S. aquila*.

NOTE.—The caudal fin is pointed at its upper edge, and the lower part is rounded; the two dorsals are united by a membrane nearly half as high as the last spine of the first dorsal.

At Sydney this fish is common, and I have seen rather large specimens of it towards the end of summer. It is generally called *Jew-fish*

KURTUS GULLIVERI.

Height of body contained twice and a half in the total length without the caudal fin; head, not quite three times and one-third in the same; the upper profile is convex in front; very convex, and almost gibbous over the præopercule, very elevated in front

and below the dorsal; from thence it forms a regular convex curve up to the caudal fin; the lower profile is very concave up to the anal, and then runs straight; the cleft of the mouth is very oblique; there is a series of eight spinous tubercules along the anterior part of the back; dorsal truncated posteriorly with the last ray two-thirds as long as the first; this fin has two spines and thirteen rays; the caudal is large; the anal has two spines and from forty to forty-two rays: on a considerable number of specimens, none have the anterior protuberance, believed to be sexual in *Kurtus Indicus*.

Preserved in spirits, the fish is of a yellow flesh colour, but when alive Mr. Gulliver says it was entirely diaphanous; he found this sort in a fresh water pond near the Norman River.

The largest specimens are a little over four inches long.

ECHENEIS NAUCRATES.

Echeneis Naucrates, Linn. Syst. Nat., vol. I., p. 446.
„ „ White, Voyage New South Wales, p. 296, pl. 64, f. 3.

The fish of this genus are remarkable by a suctorial disk formed of numerous pairs of laminæ situated at the hinder part of the anterior portion of the body, and by means of which they adhere to rocks, other fishes, &c. This sort inhabits the West Indies, Brazils, the China and Indian Seas. The specimen from Australia is about seven inches long, and is from Cardwell, in the north of Queensland. It was given to me by Mr. Duboulay.

SCATOPHAGUS ARGUS.

Chætodon argus, Linn. Edit. Gmel., p. 1248.

This sort that I had frequently observed in India and China is met in considerable numbers at the mouth of the Brisbane River in Moreton Bay. It is often called by the fishermen *Leather Jacket*. When the thick skin has been removed it is sometimes used for food.

The largest of my specimens measures near fourteen inches, and I find that the dorsal spines seem to become lower in those old individuals than in the others. In this specimen for instance

the fourth dorsal spine is contained over three times in the height of the body, but I do not believe that *Scatophagus ornatus* of Cuvier and Valenciennes can be united with it on account of the difference of the colours. On the living specimen the general colour is of a light grey with the lower parts white; the head is copper colour, and the numerous rounded spots on the body are of a dark grey.

I have lately received through Mr. Gulliver a specimen of this sort caught at the entrance of the Norman River, in the Gulf of Carpentaria, and also a small one by Mr. Duboulay, from Cardwell, in the north of Queensland.

NOTE.—I have obtained a large specimen of *Scatophagus multifasciatus* at Sydney in the month of September; it measures fifteen inches long.

PSETTUS ARGENTEUS.

Chætodon argenteus, Linn. Amœn. Acad. IV., p. 249.

Psettus argenteus, Richard, Ereb. and Terror, Fishes, p. 57, pl. 35.

This pretty little fish which I had often observed at Singapore and Malacca is remarkable by its broad compressed form and the height of its dorsal and anal fins. It is of a fine silvery colour with the fins yellow; the higher part of the dorsal and anal are partly obscure; an oblique band of purple colour over the eyes; the scales of the body fall off very easily.

The specimens are, one three inches long and the other over six. They were caught in the Brisbane River, near its mouth, in salt water. This sort bears in Queensland the name of *Sweep*; since, in the month of May, I have observed this fish in great numbers in the Sydney market.

PLATAX VESPERTILIO.

Chætodon vespertilio, Block, pl. 199, f. 2.

I have received a specimen of this curious fish from Cardwell, Queensland. It was known to inhabit all the Indian Seas, and has been found on the coast of New Guinea, by Messrs. Quoy and Gaimard. It is higher than long, very depressed, with its

dorsal, anal, and pectoral fins prolonged in long filaments. The colour is black, with the caudal and pectoral fins of a bright yellow. There is a rather broad light grey band behind the eye and extending below to the mouth.

The specimen is about five inches long. It was given to me by Mr. Duboulay.

ARIUS CURTISII.

I have lately received from Moreton Bay a fish which is very nearly allied to *Arius;* it is, perhaps, the same as *Bagrus venaticus* of Richardson (Ereb. and Terror, fishes p. 33.) The only point on which the description differs from my sort is in the number of the anal rays which are said to be *about* thirty. Dr. Gunther places it in his catalogue (Vol. V., p. 174) in his genus *Arius* of which it forms the 67th species.

The head is large, smooth in front, but covered on the crown with strong granulations, or small tubercles disposed anteriorly on rather radiated lines; occipital process extending to near the base of the dorsal spine, with a deep sulcate on the centre; the sides of the head smooth, the nostrils are remote from each other, and do not carry barbels; the upper jaw very broad, rounded in front, its breadth being equal to one-half the length of the head; the upper jaw is rather longer than the other, and has, on each side, a rather long compressed barbel more than half the length of the head, and the lower jaw two shorter ones, equally on each side; the palate is very smooth, but has on each side a small dental plate, which is much more visible on the young specimens than on the old ones, as in these the teeth take a more tubercular form; the opercles end by a strong, rounded, flap; the eye is inserted before the anterior third of the head; dorsal spine as long as the pectoral one; it is straight and serrated on both sides; the rays of the dorsal are nine in number; on a very old specimen, principally the first is rather prolonged and attenuated. The distance between the adipose fin and the posterior edge of the root of the dorsal is equal to that from the extremity of the opercle to the anterior edge of the eye; this adipose is as long as the soft part of the dorsal; the caudal

is large, forked and formed of two pointed lobes; the anal is composed of fifteen rays, and extends a little further back than the adipose; the ventrals are large, and placed in front of the last named fin; they have six rays, between several of which are short, abbreviated ones; the pectorals are considerably in front of the dorsal, they are formed of a strong spine, rather arched, and denticulated on both sides and of twelve rays; the distance between the insertion of the pectoral to the base of the ventrals is equal to four-fifths; the height of the body is contained three times and a-half in the length without the caudal fin; the head forms a third of the same length. The body is covered with a rather loose silvery skin, with the upper parts of a dark blue; the upper fins seem to have been reddish; the throat white; the caudal has in the dried specimens a yellowish olive tinge.

I have several specimens, but all badly preserved; the largest is nearly fifteen inches long, the others are about six inches. They come from Moreton Bay, in salt water, and were sent to me by Mr. Curtis, late of the Queensland Museum.

Note.—The teeth are numerous, small, conical, pointed, placed at some distance from one another on an irregular line in front of the mouth; behind these there is a broad band of small tubercular ones forming a sort of pavement, interrupted in the middle in front; the basal bone of the dorsal has the form of an oblong nail truncated at the base. The large number of the dorsal fin rays may add to the separation of this sort from *Arius*; in that case I propose calling this genus *Neoarius*.

PLOTOSUS ELONGATUS.

Height of body eleven times in the total length, head seven times and a quarter in the same; eye eight times and a quarter in the length of the head; eight barbels, the upper ones about equal, their length being contained about twice and a half in the distance from the end of the snout to the base of the first dorsal, those of the lower jaw rather shorter; teeth on the upper jaw, and on the vomer, molar like, a transverse line of longer

ones in front; these are quite blunt and, except in their length, of the same form as the others; in the lower jaw there is a similar line of rather large but truncated teeth, behind which are numerous and rather large molar teeth; the body is entirely naked, and the lateral line well marked. The spine of the first dorsal strong and straight, it is equal in length, to the distance between the end of the snout and the anterior edge of the orbit, the soft part is considerably longer than the spine, and formed of four rays; the distance between the two dorsals is about equal to the space from the end of the snout to the anterior margin of the eye; the dorsal, anal and caudal are united; the latter is very acutely pointed; ventrals about as long as the spine of the dorsal; colour, after having been in liquor, of a very dark slatey brown, with the lower parts of a whitish yellow. Length nearly one foot.

Found in the Brisbane River, in fresh water; from the Queensland Museum.

This fish constructs a nest formed of a heap of stones in which the spawn is deposited, and round this heap is a circle of stones some as large as an apple; the female fish is larger than the male, and keeps guard over the spawn, swimming round and round, as if on an axis, and rushing furiously after any fish that comes within the outer circle, serving the male fish in the same manner if it ventures near. There are many nests in the brooks round Brisbane, but they are never found in more than twelve inches of water on a fine gravelled bottom. These notes were furnished to me by Mr. E. C. Curtis, of Brisbane. The habits he mentions are very much like those of my *Chromys lapidifera*. Exped. Castel. Animaux rares ou Nouv. de l'Amér., p. 16, pl. VIII., fig. 1.

Neosilurus.

One very short dorsal fin with simple spine; no adipose fin; anal and caudal fins confluent and obliquely truncated; barbels six—one to each maxillary and two to each mandible on each side; teeth forming on the upper jaw a line of isolated, short, conical ones, with two larger in front on the palate and vomer;

numerous tubercular teeth placed at a distance one from the other; on the lower jaw also conical teeth in front and isolated tubercular ones behind; mouth small; eyes rather small above the angle of the mouth; nostrils remote from each other; head and body covered with soft skin, the upper profile of the head oblique; the dorsal fin is inserted before the ventrals; these composed of twelve rays; there is no adipose fin; the lateral rays of the caudal extend a little over the tail, those of the caudal itself become almost immediately as long as two-thirds of the head; they decrease in length after joining the anal, and thus give the caudal the form of a rather acute point; the rays of the anal are very numerous, this fin extending to the vent which is a little behind the insertion of the ventrals. These fish have rather the form of *Plotosus*, but without the dorsal fin. This genus comes near *Siluricthys*.

NEOSILURUS AUSTRALIS.

Height of body contained rather less than five times in the total length, without the caudal; length of head, four times and two-thirds in the same; eye, seven times and one-third in the length of the head, the outside barbel of the maxillary longer than the others and nearly as long as half the head; the lower jaw is shorter than the upper; the interocular space is contained three times in the length of the head, and is covered with longitudinal lines; the lateral line is well marked, continuous; the ventrals are rather small and have twelve rays; the pectorals are contained about one and a half times in the length of the head; they are formed of one rather strong spine slightly arched and barbed on its inner side, and of nine rays; the dorsal is narrow, rather high, with a slender simple spine and three rays. The fish in spirits, is of a dark slate colour with the belly rather white; fins dark.

The specimen is about eleven inches long; it is from the fresh water lagoons of Rockhampton and is called Jew Fish.

BELONE FEROX.

Belone ferox, Gunth. Catal., vol. VI., p. 242.

This sort is very nearly allied to my *B. gavialoides*, but in this latter sort the diameter of the eye is contained twice in the

interocular space, when in *ferox* this diameter is two-thirds of the same space. These two gigantic sorts have also numerous other distinctive characters. *B. gavialoides* inhabits the West Coast of Australia and *ferox* the North-Eastern one. I have seen a fine specimen of the last in the Brisbane Museum, and I possess a head of a specimen, also from Queensland.

HEMIRHAMPHUS BREVICEPS.

Total length of the head contained three times and one-third in the length of the fish without the caudal; the beak is equal to the distance between the anterior end of the mandible and the posterior edge of the orbit; the portion of the beak extending in front of the upper jaw is contained twelve times in the length of the fish without the caudal; the height of the body is six times and two-thirds in the same measurement; the back is short, straight, and pointed at its extremity; the diameter of the eye is less than the interorbital space; the caudal is forked, the lower lobe rather longer than the other; the dorsal is inserted rather behind the anal; ventrals inserted nearer to the anal than to the end of the operculum; pectorals rather longer than the inferior jaw, and rather longer than half the total length of the head; body with a silvery lateral band surmounted by a blue-black streak; the back brown; dorsal 15, anal 15, pectorals 12, lateral line 48; the end of beak is red.

The specimens are about five inches long. They are from the mouth of the Brisbane River, in salt water. This fish is called Snub-gar at Brisbane; it is generally found in great quantities with *H. melanochir*, the latter bearing more particularly the name of *Gar-fish*.

CHATOESSUS EREBI.

Chotoëssus erebi, Gunther Cat. VII., p. 207.

„ *ocme*, Richards, Ereb. Terr., p. 61, pl. 38.

A specimen, absolutely similar to the one figured by Richardson, has been sent to me by Mr. Staiger, as coming from the mouth of the Brisbane River, and as being known in the Brisbane market under the name of *Sardine*.

NOTE.—Mr. Gulliver has lately sent me a *Chatoëssus* from the Norman River on the Gulf of Carpentaria; it is similar to the one from the Western coast of Australia, and so *C. erebi* would be found at Swan River, in Dampier's Archipelago, in the Norman and Brisbane Rivers; and *C. Richardsoni* would only inhabit the Murray River; the first is easily distinguished by its more elongate form, and by the last ray of its dorsal extending to the end of the body. The Murray River species has a more convex profile, and its last dorsal rays covers very little more than half the distance to the base of the caudal.

ELOPS SAURUS.

Elops Saurus, Linn. Syst. Nat. 1, p. 518.
„ *machnata*, Forsk. Ruppel.
„ *purpurascens*, Richards.
„ *capensis*, Smith, Castelnau, olim.

I had often seen this fish at Singapore and Malacca, and also at the Cape of Good Hope, and I was very much pleased when at Brisbane a fisherman brought me a fine specimen twenty-five inches long.

The fish is of a fine silvery colour, with the back of a beautiful blue; the upper part of the head almost black; the opercles iridiated; dorsal and caudal fins of an obscure yellow; anal and ventrals white with a yellowish tinge; the pectorals are black with the inner part white.

It seems to be admitted that this *Elops* is found in almost all the warm or even temperate seas of the world. It has been observed on the coast of the United States, in the West Indies, at Zanzibar, at the Mauritius, in India, in China, and in Australia.

BRISBANIA STAIGERI.

Pl. III.

In my *Researches on the Fishes of Australia*, published at Melbourne in 1875 in the *Official Records of the Philadelphia Centennial Exhibition*, I mentioned that a drawing of a fish, caught

in a Lagoon near Brisbane, had been sent to me by Mr. Staiger, and that by its absence of teeth and its general form, it seemed to belong to the *Cyprinidæ* and to come near *Leuciscus*.

The curious form of this fish, and what was said of its remarkable edible qualities, had caused some interest at Brisbane, and when in the month of June, 1876, I went to that capital of Queensland, it was arranged between Mr. Staiger and the Director of the Botanical Gardens, on whose land the Lagoon is situated, that able fishermen should be called, and that the waters of the land should be thoroughly searched. During this operation, which proved a complete failure, and only produced a number of very large Mullets, it was found that the fish had been caught in the upper waters of the Brisbane River, and had been put in the Lagoon many years before. I had given up all hopes of being able to solve this little scientific mystery, when a fisherman who was in the habit of bringing me all the sorts he did not see habitually, brought me a specimen. I immediately recognised it as the so-much desired fish. It had been caught in the upper part of the Brisbane River.

It was then easy to see that the fish had small teeth that had escaped the attention of the draughtsman, and that it belonged to the *Clupeidæ*, and came very near to *Chatoëssus*. By its long tapering maxillary, it is also allied to *Gnathobolus* of Cuvier, which M. Valenciennes placed immediately before *Chatoëssus*, and Dr. Gunther unites with *Pristigaster*, near which the great French Naturalist had placed them. It seems by its characters to constitute a particular groupe in the family to which it belongs; the genus can be characterised as follows: Mouth very wide, opening upwards, the lower jaw being much longer than the upper one; maxillary very large, broad, moveable, rounded in form of a sword; teeth fine, and very numerous on a line in the jaws; they also extend on the vomer, and palatines, in three large patches of which the central one has the form of a heart, and the lateral ones are elongated; the opercle rounded, the single dorsal is inserted a little behind the centre of the fish; its lower ray is prolongated as in *Chatoëssus*, and *Megalops*; it is formed of eighteen rays, of

which the three first are simple; the caudal fin is strongly bifid; the anal is long with its anterior part much higher than the other; the ventrals are placed a little in front of the dorsal, the pectorals below the end of the operculum; the body is covered with large scales, and the abdomen is not serrated. The characters that we may consider as specific are the following:—body oval, elongate; head nearly as long as the height of the body, and contained three times and two-thirds in the total length without the caudal; eye, very large—contained three times in the length of the head; the upper jaw much shorter than (nearly twice in) the diameter of the eye.

The lateral line extends over forty-four scales, and is marked by a succession of fan-like striæ; on the transverse line the scales number eleven, the lateral line passing over the fifth.

The dorsal is much higher than long, formed of eighteen rays, of which the fourth is the longest; the others go decreasing in length; the last is very long, arched, and attains to near the upper base of the caudal; this latter has its lobes pointed, and three times longer than the centre; the anal is nearer to the caudal than to the ventrals; it is rather long, and formed of twenty-four rays, of which the three first are simple; this fin is rather longer than one-half of the head, and its 4th, 5th, and 6th rays are higher than the length of the fin; the others go on decreasing, and the central ones are only about one-third of the length of the others; the two or three last are longer, and about one-half the height of the longest; ventrals formed of one long slender spine, and of nine rays; at the base of this fin, and also of the pectorals, there is a long-pointed, detached scale; pectorals rather longer than the ventrals, formed of one long slender spine and of thirteen rays.

The general appearance of the fish is very silvery; the back is green; the head has golden tinges; the fins are green, with the exception of the ventrals, which are pink.

My specimen is about sixteen inches long, but it is said that this fish sometimes measures two feet.

MURÆNESOX CINEREUS.

Muræna cinerea, Forsk. Descr. An., pp. X and 22 (according to Dr. Gunther.

Ophisurus rostratus, Quoy & Gaim. Voy. Uranie, Zool., pl. 51, fig. 1.

Conger oxyrhynchus, Eydoux & Soul., Voy. Bonite, pl. 9, fig. 2.

Muræsox bagio, Peters; Kaup, Apod., p. 116, pl. 14, fig. 73.

This fish, remarkable by the strange tricuspid teeth of its vomer, has very much the form of an *Ophidian*, but its fins, and particularly its pectorals, are well developed. The specimen I possess is from the Brisbane River, and is about thirty inches long.

NOTE.—It is singular that in his Règne Animal, Cuvier considers this sort as belonging to the genus *Ophisurus*, with which it has so little resemblance.

The specimen was sent to me by Mr. Curtis.

OPHICHTHYS EPISCOPUS.

This sort has its teeth large and pointed; the pectoral small but well developed; the maxillary teeth in a double series, the mandibulary ones in a single series; lips not fringed; snout moderately produced.

In this division of Dr. Gunther, which corresponds to the genus *Herpetrichthys* of Kaup, two species seem nearly allied to the Australian fishes *regius* and *ornatissimus*, but in both the dorsal is spotted and the annular body bands seem to be of a different form; the height of the fish is contained fifty-one times in its total length; head fifteen times and a quarter in the same; the pectoral is contained three and a half times in the length of the head, dorsal commencing behind the end of the pectorals; general colour lilac, with twenty-three broad transverse bands of a darker colour; they do not extend to the lower part of the body, which is white; the space they cover is broader than the one they have between them; the interspaces immaculate, dorsal fin grey; the head is covered with small purple spots, and there is a broad longitudinal band of the same colour, but of lighter

tinge on the sides of the head, leaving a large oblong white spot on the posterior part of the head, which extends to the rest of the pectorals.

From Moreton Bay. The specimen is nearly sixteen inches long.

NOTE.—This species resembles *Ophisurus alternans*, Quoy and Gaim. Voy. Freycinet Zoology, pl. 45, fig. 2.

TRIACANTHUS BIACULEATUS.

Triacanthus biaculeatus, Block, p. 148, fig. 2.

A specimen about four inches long of this curious fish was sent to me from Cardwell, in the north of Queensland. It is entirely of a silvery colour; the anterior profile of the head is more elevated than Block's figure.

This sort inhabits the Indian Archipelago, and Dr. Gunther quotes it from Port Essington. We see that it follows also the North East Coast of Australia.

MONACANTHUS YAGOI.

It is always with much reluctance that I describe a species of this genus as new, for it is stated that they are subject to great variations during their life. This is rendered probable by the fact that it is very rare that I can place the specimens I obtain under any of the species described by the authors, and it would be very desirable that large numbers of specimens were studied to well establish their specific differences. Unfortunately the Australian fishermen not only cannot be induced to collect them, but always throw away any *Leather Jackets* that they may get by chance. They are very rarely caught with the net, and they only take the hook with difficulty. They also generally inhabit the vicinity of rocks where the fishermen do not willingly carry their researches. The present sort is in form, nearly allied to *Monacanthus variabilis* of Richardson, but its anterior profile is much more convex; the mouth is not protruded; the dorsal spine is straight and is inserted over the centre of the orbit; the body is velvety; the centre of the tail is covered with short stiff slender spines, and behind these are two tubercular arms with

four short spines directed backwards (two on each side); the ventral spine is very small; the caudal is rounded; the dorsal is formed of thirty-three rays and the anal of twenty-nine; after having been preserved in liquor the colour is of a uniform light greyish yellow, with the belly and fins of a light yellowish green; on the space between the mouth and the eye there are traces of rather numerous transverse light blue stripes running rather obliquely, and the lower parts have longitudinal lines of the same colour; on the throat are rounded similar spots; on the living specimens the colours seem to have been very beautiful, as Mr. Yagoe, who caught them in St. Vincent's Gulf, writes that "the colours were something magnificent, from orange to red, from the lightest to the darkest green, and from azure to purple, were all splendidly shaded." The total length is ten inches and a half, and the greatest height of the body four inches and two-thirds.

MONACANTHUS SANTI JOANNI.

Enters Dr. Gunther's division. "Anal fins with less than forty rays; dorsal spine with four series of barbs, the front series much closer together than the hinder series, and formed by small barbs."

The profile of the head is rather concave in front and slightly convex towards the spine; skin entirely covered with small tubercules, radiated at the base and terminated by a keel, truncated and rather crenulated at its extremity; these tubercles are placed irregularly, but forming rather transverse than longitudinal lines; the tail has no spines, and is like the other parts of the body; the head is contained three times in the length without the caudal; the height of the body is about one-half of the length; the dorsal spine is nearly as long as the head; it is straight and slender; the posterior barbs are large and directed downwards, but they only occupy the lower half of the spine; this last is inserted a little in front of the centre of the eye; the pectoral is rather behind; the second dorsal is formed of twenty-eight rays; the caudal is rounded; the anal has twenty-six rays; the ventral spine is rather large; it is star like in front and bifid

behind. I have only seen dried specimens, and can say nothing of the colours; on the caudal there is a mark of a rather narrow black band placed obliquely on each lobe.

This sort seems to be rather common in Hobson's Bay, and attains from ten to twelve inches long. The first specimen I saw was given to me by Mr. St. John, a most able taxidermist.

Monocanthus peronii.

I have obtained a specimen of this sort from Hobson's Bay, which would be according to Dr. Gunther a male; it has on each side of the tail an elongated patch of long, straight, slender but very stiff bristles, having entirely the form of a tooth brush; these bristles or spines are higher in the centre where they are nearly an inch long; the specimen is near ten inches long, and has been dried; in that state the colour is of a rather light brown, marked on the lower parts with light grey; the skin is covered with very small tubercles.

Note.—A careful comparison has satisfied me that my *Monacanthus obscurus* is identical with my *M. margaritifer;* the differences observed are only due to the state of preservation of the specimens; the first is dried and from Swan River; the others were in liquor and from South Australia.

Tetrodon bibroni.

Body naked; snout obtuse and short; eye nearer to the end of the snout than to the gill opening; the interorbital space is flat; its breadth taken at the centre of the eye, is equal to one-half the distance, from the end of the snout to the base of the dorsal; it has no ridges; all the upper part of the head is rugose; the belly has a rugose appearance, caused by a quantity of very minute spines. The colour is dark purple with the lower parts white; three broad black bands cross the upper part of the body, one over the eyes, one behind the pectorals, the other shorter, almost round, at the base of the dorsal; fins white.

The specimen is two inches and a-half long, and comes from the entrance of the Brisbane River, in salt water.

This sort by its nasal organ, very conspicuous, composed of one opening on each side, being a simple circular cavity, would enter the late Bibron's genus *Monotretus*.

TETRODON STAIGERI.

Rather large spines cover the body, except the snout, and stopping just before the insertion of the dorsal fin, leaving all the posterior part naked; these spines are numerous, but rather distant over from the other, and about one line long; those of the upper part of the body have three roots, and those of the belly four; the length of the orbit contained twice and a-half in the interorbital space which is convex; length of the caudal fin equal to its distance to the posterior edge of the dorsal. The upper part of the body is of a dark slatey colour, with rounded black irregularly placed spots; the lower part is white, a large obscure spot at the base of the pectorals.

The specimen is not four inches; it comes from the Brisbane River, where Mr. Staiger says it is called *Toad Fish*.

This sort is very nearly allied to *T. hispidus*, and comes in the same division, but is very distinct by its spines being much longer and set considerably more apart.

Description of a new species of *Ianthænas*, from the Duke of York Islands.

By E. P. RAMSAY, F. L. S., &c. &c.

IANTHÆNAS PALLIDICEPS, *sp. nov.*

Like I. metallicus, *Temm.*, but having the whole of the head and throat white.

The whole of the head and throat white, with a faint opaline rosy tint in certain lights; the quills of the wings and tail, the primary-coverts above, the under wing-coverts, outer series of the under tail-coverts, slatey black; the neck, and all the upper and under surface of the body, upper tail- and wing-coverts, slatey black at the base but broadly margined at the tips of the

feathers, with a rich opaline rosy tint, greenish in reflected lights. The basal portion of the bill, bare space round the eye, and the cere red; tip of the bill horn yellow; legs and feet red; claws yellow at the base, brownish at the tip.

Total length 16 inches; wing 9 inches, tail 5 inches, tarsus 1·1 inches, mid-toe 1·6 inches, its claw 0·5 inch, hind-toe 0·75 inch, its claw 0·4 inch, bill from forehead 1·4 inches, from gape 1·5 inches, from cere 0·75 inch.

This beautiful species, previously referred to in my remarks on the Rev. Mr. G. Brown's collection of Birds from New Ireland, &c.; comes close to *Ianthænas metalica* of Temmink. The specimen is not in quite full plumage, having a few of the old feathers on the head and throat and nape, showing that the feathers on these parts were previously dark brown with white tips; the new feathers are altogether white (except at the extreme base) and have a delicate opaline rosy tint, in certain lights.

This specimen was the only one obtained and comes from the Duke of York Islands.

MONDAY, October 29, 1877.

W. J. Stephens, Esq., M.A., President, in the Chair.

VISITOR PRESENT.

Dr. Hector, F.R.S., &c., Wellington, New Zealand.

MEMBER ELECTED.

Dr. Clive Belisario.

DONATIONS.

On some New Tasmanian Shells, and on a New Reversed Tasmanian Helix, by the Rev. J. E. Tenison-Woods, F.G.S.

Report of the South Australian Institute, by the Institute.

Geological Survey of New Zealand, 73-74, 74-76, 76-77.

And Chromolithograph of Colorado Beetle, by Dr. Hector, of the Colonial Museum, Wellington, N.Z.

PAPERS READ.

On some Australian Shells, described by Dr. A. Gould, by the Rev. J. E. Tenison-Woods, F.G.S., &c., Cor. Mem. Lin. Soc., N. S. W.; of the Roy. Soc., Tas.; and Hon. Memb. Roy. Soc., N. S. W., &c.

Many Australian Naturalists have no doubt been puzzled, as I have often been, to find the name of Gould as a reference after some Australian Mollusca, and though it is generally known that it is the name of an American conchologist, yet few have been able to compare any of his descriptions. As the works he wrote are extremely numerous and for the most part scattered through various American publications, I thought it might be a useful work to bring together, as far as they were accessible to me, all his descriptions of Australian species. They were for the most part contained in the Proceedings of the Boston Society of Natural History, but were continued through several volumes. I am not aware of any copy of this publication except in the Melbourne Public Library, and I availed myself of a visit to Melbourne last year to copy all the Australian references. This was done for my own use, but I think I shall be rendering a service to my scientific brethren and to the public, by publishing my notes, together with such information as I have been able to gather of the Australian species described by Dr. Gould, and of his own life and labours.

He was born at New Ipswich, in the United States (New Hampshire County), on the 23rd April, 1805, and entered the American Cambridge University in 1821. After some time he was appointed a tutor in the same college, and having chosen the medical profession he became house student in the Massachusetts General Hospital. He graduated in 1830. From his youth he had manifested extraordinary industry, with a great taste for Natural History. Both these qualities were exhibited in his first work, which was a Monograph of the Cicindelæ of Massachusetts, published in 1834. This was quickly followed by a classified catalogue of 50,000 pamphlets in the collection of the

Boston Athenæum. From that time forward his tastes and studies took a decided turn for Conchology, and it would be a long work to attempt to give a list of the various essays, papers and work put forth by him on that subject during the rest of his extraordinarily active and useful life. In 1848 he was associated with the elder Agassiz in preparing a work on the principles of Zoology, and for many years issued certain essays of great value in his particular department of science named *Otia Conchologica*.

In 1846 he was employed by the American Government to report upon the shells collected in the U. S. Exploring Expedition under Commodore Wilkes. This task was not completed for some years and was continued in the Proceedings of the Boston Society of Natural History through many volumes. The eminent career of this zealous scientific labourer was cut short in a very unexpected manner. Dr. Augustus A. Gould died of cholera, in Boston, after an illness of only 15 hours, on September 15, 1866, at the age of 61.

The following is a collection of all the descriptions of Australian Shells named by him. *Proc. Bost. Soc. Nat. Hist., vol II., p.* 142.

CHITON QUERCINUS.

T. depressa, ovalis, vix carinata, QUERCINA, *maculis olivaceus nebeculata, valvis subrostratis, areis lateralibus vix elevatis, longitudinaliter, sulcatis, sulcis incumbentibus et sulco radiante bisectis, areis centralibus ad latera lineis rugosis longitudinaliter sculptis, ad dorsum punctatis; valva anteriori sulcis concentricis et sulcis radiantibus remotioribus decussata; valva posteriori prope marginem umbonata, margine lato, pumicoso, flavescente.* Long. $\frac{1}{5}$, lat. $\frac{1}{8}$ poll. *Hab.* N. S. Wales.

Allied to *C. foveolatus* Sowerby.

CHITON JUGOSIS.

T. ovalis, carinata, tectiformis, nitida, coloribus pallide et saturate herbeis variegata, valvis planulatis, ad apices adunco acuminatis, areis lateralibus prominentibus et lineolis confertis

parallelis viridibus longitudinaliter notatis, areis centralibus sulcis acutis parallelis longitudinaliter aratis, sed ad verticem simplicibus et minutissime punctatis, valva anteriori concentrice lineolata, valva posteriori umbonata, prope marginem concentrice lineolata præter aream terminalem luteolam, margine granulato, fasciis cæruleis et viridibus limbato, intus pallide virescens. Long. 1, lat. $\frac{3}{5}$ poll. *Hab.* N. S. Wales.

Resembles *C. siculus*, which, however, has radiating lines on the lateral areas.

CHITON FRUTICOSUS.

T. ovalis, valde elongata, transversim arcuata, omnino textiliter punctata, olivacea, maculis minutis, saturatioribus fulgurantibus variegata, valvis haud rostratis, areis lateralibus prominentibus et lineis elevatis interruptis ramosis, radiantis, areis centralibus lineis longitudinalibus rugosis ad latera profundis, ad dorsum evanidis et arcuatis sculptis, area posteriori magna, umbonata, lineis inconspicuis interdum divaricatis radiata, intus flavo-olivacea, ligamentum latum, pallidum minutissime granulatum. Long. $1\frac{1}{2}$, lat. $\frac{5}{8}$ poll. *Hab.* N. S. Wales.

Resembles fig. 6 of Sowerby's Conchological Illustrations, which is said to be a variety of *C. indicus*, but which has no ramose structure on the lateral areas.

CHITON PLATESSA.

T. parva, tenuis, elongato ovalis, transversim arcuata, citrino olivacea, ubique minutissime punctata, areis lateralibus parvis, vix elevatis, lineis 2-3 inconspicuis, striatis, areis centralibus lineis confertis acutis, granulatis arcuatim decussatis; valva postica magna, obscure radiata, margine virente, fusco tesselato, minutissime granulato, intus cæruleo virescens. Long. $\frac{7}{8}$, lat. $\frac{9}{20}$ poll. *Hab.* N. S. Wales.

Similar in its general aspect to *C. fruticosus*, but smaller, smoother, and the sculpture of the lateral areas and terminal valves entirely different. It is almost exactly like fig. 67 of the Conchological Illustrations.

[The shell referred to is *C. pusillus*, Sow., S. America, our *Chiton Australis*, Lam. not. Sow. J. E. T. W.]

CHITON INCANUS.

T. solida, oblongo ovalis, valde convexa, cinereo et nigro variegata concentrice undulato striata, granulis sparsis nigris aspersa, ad dorsum subcarinata et longitudinaliter nigro bifasciata; areis lateralibus vix distinctis, margine aculeis inequalibus curtis, curvatis nigris et canescentibus induta. Long. $\frac{1}{10}$, lat. $\frac{3}{4}$ poll. *Hab.* N.S. Wales.

Like *C. piceus*, Gray, and still more like *C. petholatus*, which has a hairy margin.

(Page 151.)—PATELLA CINNAMONEA.

T. ovalis, parva, convexa, tenuis, cinnamonea, cum striis radiantibus, tenuibus, confertissimis imbricato asperis; apice acuto, antico, ad marginem valdo declinato; apertura margine anterior excurvato, intus costa alba marginali minuta. Long. $\frac{1}{2}$, lat. $\frac{3}{8}$, alt. $\frac{2}{10}$ poll. *Hab.* N. S. Wales.

Closely allied to *P. galathea*, Lamarck, which, however, is snow white, more circular, the apex more central, and the striæ much coarser.

[This diagnosis is obscurely brief, but appears to refer to a *Siphonaria*.—J. E. T. W.]

HALIOTIS CRISPATA.

T. parva, tenuis, convexa, elongato ovalis, undulis obliquiis, angulatis, divaricantibus rugata, spiraliter striata, rubida; spira elevata, submediano, foraminibus parvis, circularibus, confertis, ad septennis perviis, extrorsum canaliculatis, intus undulosa, nitida argentea. Long. $1\frac{3}{8}$, lat. $\frac{7}{8}$ poll.

With N. Holland shells. About the size and form of *H. stomatiæ-formis*, Reeve, but distinguished from all others by its crowded angular ripples arranged somewhat like the colors of *H. ziczac*. No shell approaches it in this respect, except the very young of *H. australis*.

[Very probably a young variety of *H. nævosa*, of which *H. australis* is a synonym. In the shape and the undulations referred to that species is extremely variable. J. E. T. W.]

(Vol. 3, Proceedings Boston Soc., Nat. Hist., p. 74, on the shells of Commander Wilkes' Exploring Expedition.)

AMNICOLA BADIA.

T. minuta elongata, ovata, turrita, badia, spira acuta, apice erosa; anfr. 5, *convexiusculis, ultimo vix angulato, sutura impressa, apertura ovata, peristomate continuo, obtuso, fusco.* Long. $\frac{1}{3}$, lat. $\frac{1}{12}$, poll. *Hab.* Banks' Peninsula, New Zealand.

A small elongated species, like *A. Preissii* of N. Holland. Its color and its dark obtuse peristome give rather a marked character to a shell so small and simple.

[Appears to resemble the minute genus so common in the freshwater lakes and streams of Australia and Tasmania, and which is variously named *Paludestrina, Bythinia, Hydrobia, Bythinella,* and *Amnicola.* I am of opinion that this shell has been redescribed in the Zoological Proceedings as *Paludestrina saleana* by M. Fischer. J. E. T. W.]

AMNICOLA EGENA.

T. minuta, tenuis, subperforata, elongato-turrita, epidermide virescente induta; spira acuta; anfr. 5, *convexis, sutura profunda, apertura ovata, peristomate continuo, labro acuto, patente.* Long. $\frac{1}{5}$, lat. $\frac{1}{10}$, poll. *Hab.* Banks' Peninsula, New Zealand.

More slender and less solid than *A. badia*, and of an entirely different color. It is very much like *Paludina acuta* of Europe.

(Vol. 3, loc. cit. p. 90.)—TROCHUS SIRIUS.

T. parva, imperforata, pyramidata, dilute beryllnia, leviter corrugata; spira anfr. 4, *conicis, infra oblique plicatis, ad peripheriam acutis et spinis compressis ad* 18, *armatis; basi planulata, stellaris, liris concentricis muricatis ad* 5 *insculptis; regione collumellari arcuata, levigata, labro peroblique.* Diam. $\frac{1}{2}$, axis $\frac{3}{10}$, poll. *Hab.* N. Holland.

The multitude and regularity of the triangular projections of the periphery when viewed from below give the base a beautiful star-like form, much like *T. stellaris.*

[This is only a young form of *Carinidea squamifera*, which has the projections at the periphery, though it loses them in the adult state. The operculum is completed very early. J. E.T.W.]

(P. 254.)—PSAMMOBIA FLORIDA.

T. transversa oblonga, tenera, polita, purpurascens, postice albo radiato, limbo epidermide flavo virescente induto, natibus postmediamis, inconspicuis, latere antico semi-elliptico, apice submediano, latere siphonali angustato, acute rotundato apice inframediano, margine ventrali rectiusculo, interior incarnata, sinu siphonali angusto prælongo; cardine dentibus duobus minutis, divaricantibus in utraque valva instructo. Long. 1¼, alt. $\frac{7}{10}$, poll. *Hab.* Illawarra, N. S. Wales.

A shell closely resembling in structure and exterior coloring *Machæra costata*. It has the form of *P. vespertina*, except that the beaks are removed much further backwards.

[A very distinct species, but rare in Port Jackson and on the East Coast.—J. E. T. W.]

(Loc. cit. p. 292.)—CYCLAS EGREGIA.

T. ventricosa transversa oblonga, subæquilateralis, concentrice tenue lirata, umbonibus parum elevatis, tumidis, epidermide viridicorneo, fusco zonato, plerumque C. cornea similis. Long. $\frac{7}{8}$, alt $\frac{6}{8}$, lat. ¼ poll. *Hab.* N. S. Wales.

It is larger, more rounded in outline, and more globose in form than *C. cornea*. The epidermis is less glistening, of a deeper green, and exhibits no traces of radiations. The ligament is shorter and more prominent. The beaks hinge and furrowing, and nearly the same in both.

(Loc. cit. p. 293.)—CYRENA DEBILIS.

T. parva, tenuis, transverse ovata, postice ampliata et subtruncata, subæquilateralis, concentrice liris confertis subreflexis arata, epidermide nitido superne olivaceo induta, umbonibus parum elevatis, erosis, absque lunula, intus violaceo, albida; dentibus cardinalibus inconspicuis, dentibus lateralibus elongatis, striatis. Long. $\frac{6}{10}$, alt. $\frac{4}{10}$, lat. ¼ poll. *Hab.* New Holland?

Most like *C. pusilla*, but has no areola in front of the beaks, is less orbicular, and somewhat larger. In general, it resembles a *Cyclas*.

(Loc. cit. vol. 7, p. 139.)—TORNATINA APICINA.

T. minuta cylindracea, elongata, alba, lineis incrementi tenuissimis insculpta, apice mammilato; anfr. 4, *sutura canaliculata. Apertura* ¾ *long. testæ, perangusta, plica columellari obsoleta, labro lateraliter viso arcuato.* Axis 5 millim., diam. 2. *Hab.* Sydney Harbour, N. S. Wales.

The aperture is broader, and the pillar-fold less definite than *T. fusiformis.*

[Very questionable if distinct from the last named, and as I think not distinct from *T. brenleyii.* Angas Zool. Proc. 1877. J. E. T. W.]

(Loc. cit. p. 140.)—CYLICHNA REGULARIS.

T. satis magna, elliptica, elongata, alba, spiraliter insculpta, vertice obtuso, late perforato. Apertura perangusta, admodum antice ampliata, columella incrassata, vix incurvata, imperforata, ventre calloso. Axis 9, diam. 4 millim. *Hab.* Sydney Harbour, N. S. Wales.

[We have only one *Cylichna* in N. S.Wales, *C. arachis* Q. and G., which seems the same as this shell.—J. E. T. W.]

(Loc. cit. P. 163.)—EMARGINULA (CLYPIDINA) RADIATA.

T. cinerea, elliptica, costis radiantibus imbricatulis ad 17, *et costulis intermedianis ad* 3 *ornata, prope apicem acutum, deflectum, submedianum clathrata, intus viride radiata, margine denticulata, fissura curta, in canalem internum versus apicem producta.* Long. 12, lat. 8, alt. 7, millim. *Hab.* Sydney Harbour, N. S. Wales.

[I doubt very much if this species is distinct from *Emarginula australis*, Lamk. J. E. T. W.]

(Loc. cit. p. 324.)—RINGICULA DENTICULATA.

T. ovata, acuminata, solida, lactea, striis confertis transversis, exilioribus (interdum intervenientibus) insculpta; anfr. 5, *ventricosis, apertura angusta, labro admodum incrassato, intus denticulato fere ad sinum siphonalem interrupto; plicis acutis, transversis, callo modico, haud oppresso, dente parietali modico.* Axis 5, diam. 3·5, millim. *Hab.* Port Jackson, N. S. Wales.

The numerous striæ, denticulate labrum, and scantiness of callus about the siphonal notch mark the species.

[We have two other species of the genus in N. S. Wales, both distinct from this. J. E. T. W.]

(Loc. cit. p. 238.)—NASSARIA CURTA.

T. parva, elongata, ovato rhomboidea, solidula, straminea, ante suturam pallidiori et fulvo maculata; anfr. 6, *ventricosis, filis ad* 8 *volventibus, et plicis ad* 15 *longitud. ornatis. Apertura angusta ovalis, labro incrassato, intus denticulato, lamina columellari erecta, rostro modico, recto.* Axis 10, diam. 6 millim. *Hab.* Port Jackson.

It is smaller than any species in the Cuming collection and has a short beak. It is like *N. carduus*, Reeve, but has serrate delicate waves.

(Loc. cit. p. 331.)—NASSA REPOSTA.

T. solida, ovato-conica, rudis, cinerea, plicis inconspicuis 12-14, *demum carentibus, et filis remotis (superne* 4*) ornata; anfr.* 7, *convexis, postice subangulatis, apertura ampla, rotundato ovata, labro incrassato, expanso, intus denticulato, columella valde arcuata, lutea, vitrea, fauce fusco, rufo, postice luteo fasciata.* Axis 12, diam. 7 mil. *Hab.* Sydney, N. S. W.

[This appears to be only one of the many varieties to which *Nassa pauperata*, Lamarck, is subject, to which also I am inclined to refer *N. Tasmanica, mihi.* Angas appears to have named the shell *N. labecula*, Zool. Proc., 1851. J. E. T. W.]

NASSA OPTATA.

T. subtenuis, ovata, conica, acuta, polita, albida, demum ferrugineo variegata; anfr. 7, *convexiusculis, ad* 12 *plicatis, plicis ad anfr. ult. tandem carentibus, striis volventibus* 5, *quorum præsuturali profundiore gemmulas efformante secantibus; sutura profunda, apertura late ovalis labro intus lævi, extus incrassato, rufo, variegato; columella admodum callosa.* Ax. 10, diam. 6 millim. *Hab.* Sydney Harbour.

Very closely resembles the figure of *N. Grayii*, Deshayes, of the *Icon. Conch.*, which, however, is believed to represent a larger and more ventricose shell than that of Kiener.

[This may be *N. rufocincta*, A. Adams, which, however, he states came from the Honduras, Port Jackson, and on all the N. S. W. coasts. J. E. T. W.]

(Loc. cit. p. 337.)—CLATHURELLA PEREGRINA.

T. avato-fusiformis solida, obscure fulva, plicis obtusis ad 18, *filis transversis (ubi plicis decussantibus) ornata; anfr.* 6, *ventricosis. Aperture* ⅔ *totius longitudinis lineata, postice rotundata, labro acuto, intus lamellato, canali brevi, angusto, abrupte incepto.* Ax 12, diam. 5 millim. *Hab.* Sydney Harbour.

Closely allied to *C. assimilis*, but less colored, and the striæ less crowded.

[This shell is very common in Port Stephens, and appears to have been re-named lately in the Zool. Proc.)

(Loc. cit. p. 386.)—CERITHIUM LACERTINUM.

T. turrita fusiformis, tenuis, cinerea, fusco maculata; anfr. 10, *convexiusculis, bene discretis, posticis plicatis, et filis granulosis* 4, *ad anfr. ult. demum simplicibus cinctis, minoribus plerumque intervenientibus. Apertura semilunaris, labro acuto, rostro abbreviato.* Ax. 13, diam. 4 mill. *Hab.* Sydney Harbour.

Exceedingly like *C. lima* Brug. It has no varices, is less slender and differently colored. It is also like *C. granarium* Kiener.

[This is evidently *C. lawleyanum* of Crosse, which must give way to Gould's name. J. E. T. W.]

(Loc. cit. p. 409.)—RISSOINA FLEXUOSA.

T. fusiformi, turrita, straminea, anf. 7, *convexiusculis, plicis obtusis, flexuosis circiter* 15, *clathratis et lineis volventibus numerosis cinctis, apertura satis magna, semicircularis, peritremate simplici expanso, antice effuso.* Axis 6, diam. 2. Sydney Harbour.

[This shell is not known to me, but may have been redescribed amongst our numerous species of the genus. J. E. T. W.]

(Loc. cit. p. 407.)—CHEMNITZA CIRCUMDATA.

T. ovato-conica polita, straminea, vitta aurantiacea cincta, anfr. 8, *convexis et sutura vix indicatis, posticis, plicis numerosis indistinctis ornatis, ultimo haud insculpto, et vittis* 5 *ornato. Apertura angusta, peritremate acuto.* Ax. 5, diam. 2 millim. *Hab.* Sydney Harbour.

MONILEA APICINA (Loc. cit. vol. 8, p. 15.)

T. parva ovata-conica, tenuis, filis numerosis subæqualibus cincta, apice flammulis sparsis, radiantibus rosaceis; anf. 5, *convexiusculis ad peripheriam obtusis; sutura profunda, basi convexa, lineis incrementi nonnihil granulatis; umbilico minuto, costa callosa et altera interiori cincto; apertura fere circularis.* Axis 5, diam. 6 millim. *Hab.* Port Jackson.

[This certainly seems to be one of the *Monileæ* of E. Australia, probably *M. australis?* of Angas.]

CLANCULUS JUCUNDUS.

T. parvula depressa, ovato-conica, ochreacea, vel rufescens; anfr. 5, *convexis, prope suturum tesselatis, interdum omnino strigatis; lineis inæqualibus cinctis, ad anf. maj. gemmatis; sutura canaliculata; basi rotundata, umbilico crenulato, dente columellari eminente, acuto; labro intus sulcato.* Axis et diam., 5 mil. *Hab.* Sydney, N. S. W. About the size of C. minor.

[This diagnosis is very general, and really would apply to many of our N. S. W. species. It would be difficult to determine it without seeing the type.—J. E. T. W.]

ELENCHUS OCELLATUS.

T. parva elevata, ovato-conica, polita, postice ex rufo virescens; antice rubescens, lineis volventibus pallidis rufo-marginatis circiter 4, *et lineis flexuosis obliquis ornata; anf.* 7, *vix convexis, punctis albis circiter* 6 *cinctis, ultimo ad peripheriam obtuse angulato; basi convexa, apertura ovata, intus virescens, columella pallida, dente obsoleto albido instructo.* Axis 12, diam. 7. *Hab.* Sydney, N. S. Wales. Allied to *E. minor.*

ELENCHUS EXIGUUS.

T. minuta, lævis, ovato-conica acuta, flavida, rosacea vel fulvida, plus minusve lineis saturatioribus vel vittis articulatis ornata; anf. 5, ventricosis, apertura rotundato-ovata, columella planata, decolorata, dente acuto, deflecto, minuto. Axis 2, diam. 1·5. *Hab.* Port Jackson.

CANTHARIDUS LINEOLARIS.

T. elevato-conica, perforata, aureo-viridis lineis angulatis luteis prope suturum dilatatis, ibi nigro maculatis, striis incrementi et striis volventibus subtillissimis reticulata; anfr. 7, planulatis, ultimo angulato, apertura parva, subtriangularis. Axis 7, diam. 4. *Hab.* Sydney, N. S. W.

THRACIA CULTRATA.

T. parva, alba, tenuissima, ovato-rhomboidea, ventricosa, intus argentata antice semi-elliptica, late rotundata, umbonibus post medianis, acutis, margine dorsali posteriore, declivi, extremitate truncata; angulo superiori acuto, declivitate umbonali acuta; margine ventralis vix arcuata; apophysi cardinali triangulari (Valva sinistra ignota.) Long. 8, alt. 6, lat. 4. *Hab.* Port Jackson, sandy mud, 8 to 15 fathoms.

LEPTON CONCENTRICUM.

T. ovato-triangularis, subplana concentrice concinne lirata (liris acutis) epidermide subrugosa marginem implicante induta: umbonibus post medianis acutis; cicatricibus subelongatis, linea pallii emargine remota, dentibus minimis lateralibus utraque valva remotis, fere obsoletis; valvæ dextræ dente cardinali unico; v. sinistræ dentibus duobus minimis margini contiguis. Long. 10, lat. 4, alt. 7. *Hab.* Sydney Harbour.

This beautiful species is easily known by its minute teeth, concentric sculpture, and abundant epidermis. Its shape is unusually unsymmetrical, and not unlikely it belongs to a genus not yet established.

KELLIA BALAUSTINA.

T. minuta nitida rotundato-ovata, rubiginosa, subdiaphana, lineis concentricis creberrime insculpta, umbonibus submedianis eminen-

tibus, margine ventrali valde arcuata, marginibus cardinalibus rubidis, valvæ alteræ dentibus card. 2, *parvis, dentibus lateralibus brevissimis, postico fere obsoleto, valvæ alteræ dentibus lateralibus curtis, antico obsoleto, dente cardinali, unicovalido.* Long. 2·5, alt. 2 mil. *Hab.* Sydney Harbour.

MODIOLARIA VARICOSA.

T. tenuis-compressa, ovato-trapezoidalis, dilute viridis, lineis fuscis angulatis ornata, umbonibus terminalibus, extremitate antica acuta, marginibus arcuatis, divergentibus, extremitate postica rotundata, arcis lateralibus striis frequentibus radiantibus impressis; area mediana striis concentricis vel etiam striis radiantibus solum insculpta; pagina interior nacrea, lineis angulatis rufis perlucentibus. Long. 9, alt. 6, lat 2·5 mill. *Hab.* Sydney Harbor.

EMARGINULA ASPERA.—(Loc. cit. vol. II., p. 154.)

T. parva tenuis, depresso-conica, fuliginosa, costis elevatis, quadratis plerumque duplicibus ad 10, *albidis, ad intervales striis crebris decussantibus exasperatis vertice subcentrali, acuto, recurvo, intus glauca, albido radiante margine denticulato, incisura angusta, profunda, intus in canalem versus apicem producta.* Long ⅛, lat. , alt. poll. *Hab.* Sydney. Much like *E. rugosa*, Quoy and G. in size and form, but differing in color, sculpture, and the larger size of the notch.

EMARGINULA OSSEA.

Is described as from the Fiji Islands, and was identified with *Tugalea Tenisoni, nobis*, but Dr. Gould distinctly says his shell is thick and coarse and allied to *Emarginula australis* Lam., while the Australian and Tasmanian shell is fine, thin and depressed.

I have only to add that I have not interfered with Dr. Gould's Latin. This eminent naturalist it will be seen took many liberties with the classic language.

On some New Marine Shells.

By Rev. J. E. Tenison-Woods, F.G.S., Hon. Mem. Roy. Soc. N. S. Wales, Tasmania, Victoria, Corr. Mem. Linn. Soc., N. S. W., &c.

The following shells were dredged off Port Jackson Heads at a depth of 45 fathoms, and were handed to me for description by Mr John Brazier, C.M.Z.S.

Terebra lauretanæ, n. s.

T. parva, pyramidata, turrita, opaca, haud nitente, albida, maculis latis, quadratis, fulvis tesselata (in ult. anfr. maculis 2 lin. distinct. zonata); anf. (*nucl. excluso*) 8, *planatis, lineis incrementi undulatis rugoso-striatis, superne valide spiraliter canaliculatis supra canalem obsolete granulatis; nucleo* (1½ *anfr.*) *naticiformis nitente, basi maculata, convexa, striata labro acuto, columella nitente, exacte definita, canali recurvo, brevi, sutura acute impressa.* Long. 20, lat. 6½ mil.

This Terebra resembles a good many of our Australian and Tasmanian forms in the distinct groove in the upper 3rd part of the whorls. It is most like *T. Brazieri*, Angas, but that shell is always longer, and has acute shining ribs. Until we are better acquainted with the younger forms of this and similar shells its specific value must remain doubtful.

Turritella incisa, n. s.

T. parva, pyramidata, turrita, spira acuta, subpellucida, pallide fulva; anf. 13, *utrimque late marginatis margine elevata, striata, albo fulvoque eleganter tesselata, intra margines bi-liratis;* 5 *anf. apicalibus translucidis et rotundatis; basi concava, lirata; apertura quadrata, labro acuto, sinu angusto, profunde insignito.* Long. 11, lat. 3 mil.

This remarkable little Turritella is distinguished by the narrow and very deep sinus in the outer lip. It has a raised tesselated margin above and below on each whorl, and the intervening space has two distinct liræ. The colour is pellucid, golden reddish, and the tesselations are red and white. We have one or

two Australian Turritellas with a sinus in the outer lip (*T. sinuata*, &c.), but the sinus is broad and shallow, while in this case it is a narrow deep cut of equal width extending some 4 or 6 millim. into the shell.

CINGULINA TORCULARIS.

This singular species is distinguished by its very prominent spiral keel on the centre of each whorl, which makes the shell appear like a small screw. The nucleus is smooth, white, and shining, not reversed but subvertical; the base has three rounded keels, and the aperture is somewhat produced. It is larger than CINGULINA AUSTRALIS nobis, has only one keel, while that shell has two.

*T. parva, subdiaphana, sordide alba, subnitente, pyramidata; anf. (nucleo excluso)*4, *in medio valde unicarinatis, carina acuta elevata, sutura profunde impressa, nucleo lævi, nitente, subverticaliter sito; basi conspicue tricarinata, peripheria altimi anfr. acuta, apertura circulari integra, extus conspicue quadricostata, labio tenui, leviter reflexo, labro antice producto.* Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ mil.

NATICA SUBCOSTATA.

T. parva, oblique elliptica, nitente, polita, alba auguste umbilicata, anf. 3, *rapide decrescentibus, ultimo lævi, striis tantum incrementi sparsim munito; penultimo costis parvis regularibus radiatim ornato; apertura semilunari, magna, labro acuto, labio recto; umbilico callo parvo, spiraliter costiformi insignito.* Major diam. 5, min. $3\frac{1}{2}$ mil.

A small, smooth-shining Natica of oblique elliptical form, mainly distinguished by small, fine radiating ribs on the penultimate whorl.

The next shell which I have to describe is of so rare and remarkable a genus that a few words concerning its generic history may not be unnecessary. The genus RAULINIA to which it belongs was erected by Mons. C. Mayer (*Jour. de Conch.* 1864, p. 180) for small turbinated, oblong, oval, thin shells, with spiral grooves. Whorls rapidly increasing, convex; the last very large. Aperture large, slightly oblique, oval oblong, entire,

angular posteriorly, anteriorly sub-effuse. Columella broad, curved, flattened, and with one conspicuous tooth. The author says: "The shell for which I have erected this genus, although extremely rare, has been long known to naturalists. It is the *Raulinia alligata*, described by Deshayes, in his '*Desc. des. coq. foss d. environs d. Paris*' as a *Tornatella*, and finally placed by the same author in the genus *Odontostomia*. Having been so fortunate as to meet at Jeurres a fine specimen of this singular shell, I have been able to study it closely, and found myself under the agreeable necessity of erecting a new genus for it. For it seems to me that it cannot be placed with *Odontostomia*, because of its dimensions and unusual form, from its thin shell and transverse grooves, but above all from its flat non-twisted columella, carrying on the inside an independent tuberculous tooth, which is so very unlike the plait of the *Odontostomia*. By these characters it is associated with *Littorina*, and should be placed in the same family. There is in the Paris basin another shell with much the same character—that is *Littorina monodonta*. It differs from the type in its more elongated form, fainter grooves, and in the position of the tooth But I believe it should be regarded as a *Raulinia*"

It is very remarkable that a living analogue of this curious shell should be found in Australia. It is rare; but no doubt now that its peculiarities are published many more will be discovered. It has all the characters of the Paris fossils, and is another instance of how extinct forms of the Eocene (*Calcaire grossier*), and secondary formations have existing representatives in the Australian seas.

RAULINIA BADIA.

T. parva, subpellucida turbinata, spira parum, elata, pallide badia saturata, nitente; anfr. 4, *rapide decrescentibus, spiraliter regulariter carinata et liris obliquiis crebre cancellata; liris supra carinas transeuntibus; carinis rotundatis, anfr.* 13, *apice lævi, nitente, albo, diaphano; apertura integra, circulari, antice canaliculato; labro tenui, acuto, postice globose arcuato et producto; labio recto, acuto, dente conspicuo munito, umbilico angusto, profundo*

margine rotundato spiraliter circumscripto. Long. 4, lat. 2½ mil. *Hab.* Cape Solander, Botany Bay. J. Brazier.

Shell small subpellucid, spire slightly exsert, saturated brown, shining, whorls 4, rapidly decreasing, spirally regularly keeled and thickly cancellate, with oblique liræ which pass over the rounded keels; whorls 13, apex smooth, shining, white, diaphanous aperture entire, circular, anteriorly unicarinate, outer lip thin, acute, posteriorly globosely arched and produced; inner lip straight, acute, furnished with a conspicuous tooth, umbilicus narrow, deep, spirally circumscribed with a rounded margin.

DRILLIA TRICARINATA.

T. parva, elongato-fusiformi, angusta, turrita, spira quam apertura longiori, opaca, alba pallidissime fulva. zonata; anf. 6 *(nucleo tumide obtuso,* 1½ *anfr. incluso) convexis, in spira tenuiter tricarinatis, interstitiis, latis, regulariter concavis, ultimo anfr. tricarinato et lirato, sutura una carinarum insignita; apertura ovata, postice late profundoque sinuata, labro incrassato, labio encausto, exacte definito, canali lato, recto, sat brevi, basi concava, spiraliter multilirata.* Long. 6, lat. 2 mil.

A small banded shell without plaits, which is unusual in the genus, but it has three delicate keels, one of which is on the suture, and the spaces between are shallow concave grooves. The sinus is entirely posterior, is wide and deep, and the outer lip is thickened

RISSOINA CRETACEA, n.s.

T. parva, turrita, pyramidali alba polita sed periostraca cretacea quasi obtecta; anfr. 7, *convexis, crebre plicatis; plicis validis, acutis a sutura ad suturam pertingentibus; suturis bene impressis; apice lævi tumido* 1½ *anfr., apertura angusta, labio crasso; basi lævi.* Long. 6, lat. 1½ mil.

I don't know any distinguishing character for this *Rissoina*, except its chalky periostraca. It is much smaller than *R. nivea*, but larger than *R. gertrudis, nobis;* is neither pellucid nor margined at the suture. *Hab.* Off Port Jackson, 45 fathoms. J. Brazier.

RISSOINA CYLINDRACEA.

T. minuta, cylindracea, alba subpellucida, lævi, polita; anfr. 5½ *elongatis; apice obtuso, sutura marginata; apertura pyriformi, eversa, labro incrassato, labio inconspicuo.* Long. 5, lat. 1½ mil.

A small cylindrical form, differing from *R. gertrudis*, in being entirely smooth, and highly polished without any signs of plaits. The suture is margined, but the lip is inconspicuous with the lower part of the aperture everted. Off Port Jackson, 45 fathoms. J. Brazier.

EXHIBITS.

Dr. Hector exhibited a series of 60 plates of the Fossil Flora of New Zealand, photo-lithographed from drawings made by him. He also gave a general account of the Stratified Rocks of New Zealand as distinguished and related by the organic remains preserved in them.

MONDAY, 26TH NOVEMBER, 1877.

W. J. STEPHENS, ESQ., M.A., President. in the Chair.

MEMBERS ELECTED.

His Grace the Archbishop of Sydney.

The Rev Dr. Forrest.

James Hector, M.D., F.R.S., &c., of Wellington, New Zealand.

The SECRETARY reported that the Council had elected F. M. Bailey, Esq., of Brisbane, to be a Corresponding Member.

DONATIONS.

Compte Rendu de la Soc. Entomologique de Belgique, Serie II., Nos. 41 and 42, by the Society.

H. Alleyne Nicholson's Ancient Life History of the Earth, and F. P. Pascoe's Zoological Classification, by Hon. W. Macleay.

Survey of Buller Coal Fields, New Zealand, by Dr. Hector.

PAPERS READ.

On some Tertiary Fossils, from New Guinea.

By the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., &c.

At a previous meeting this year (Aug. 27), I drew the attention of the Society to some Echini, which had been obtained by Mr. Macleay in New Guinea. They were fossils, and the beds with their position and character were then described. I promised at the same time to refer to the Mollusca on a future occasion. Since then the whole collection has been carefully gone over by Mr. Masters, who has broken up all the larger portions and cleared away the matrix from the casts. The result has not revealed any new fossils, and no new casts of any definite character have been found. The consequence is that the material at my disposal is exceedingly small. There are casts in abundance, but for the most part of bivalves, and these, only internal casts are preserved from which even the genus can very seldom be ascertained. I proceed therefore to deal with what can be clearly described. The only shell is a Pecten, which appears to me to be a new species. It is a remarkable fact, as I before observed, that Pectens seem to have some singular power of resisting the dissolving action of water in limestone deposits. Pectens and Brachiopoda are the only mollusca preserved in the Mount Gambier limestones, though there are casts of others. Even the finest ornaments of the shell, and the most delicate tracery, is quite fresh and well preserved, while the large shells of other genera are entirely dissolved away. It would be really worth while to investigate the microscopic structure of these shells with a view to explain the cause of their permanent character. The following is the diagnosis of the new species.

Pecten Novæguinæ.

P. shell regularly orbicular, equivalve regularly convex, but not globose, rather thick, equilateral and symmetrically rounded at the margin; ears quite square, one being a little obliquely indented at the edge, but otherwise almost equal and rather large; furnished with 12 to 14 large rounded radiate ribs, each

with two rather shallow radiate grooves and transversely striate, striæ at the marginal end becoming scaly raised imbricateous, 8 to 10 in number, interstices furnished with two to three conspicuous, slender, granular ribs, umbones very acute, ears with 8 to 10 very granular ribs. Long. 60, lat. 50. thickness of two valves 30 millim.

The scaly margin gives this shell somewhat the aspect of *P. pallium*, but that has a generally depressed habit, and the scales cover the test. It cannot be mistaken for *P. asper* of South Australia, which has about 25 ribs, but the peculiar multiradiate form of the ribs allies it to that shell and the common Australian *P. bifrons*. It is something like *P. radula*, Linn. of the Philippine Islands, but the shape is different altogether. It is an Australian form, but with only remote resemblances, unless to one still existing in the neighbouring seas.

There are three other casts of univalves in the collection which can be determined. One is a *Phos*, which appears to be new, but is hardly sufficiently preserved for description. The other is a *Strombus*, of the subgenus *Monodactyles*, probably also new, though allied in form to *S. Novæ Zealandiæ*. The third can be identified with some certainty. It is

DOLIUM COSTATUM, Desh. in Lamarck, vol. X., p. 144.

There is no other species known to me which has the peculiar subacute distant ribs and decidedly canaliculate suture, all of which, as well as the corresponding shape are well shown in the cast in Mr. Macleay's museum. It is a common form in the Indian Archipelago, and I believe specimens have been found on the coast of New Guinea also.

These facts confirm the opinion I have already expressed, that we have in these deposits a very recent tertiary formation, much newer than any of the Murray River or Western Victorian beds. There are no fossils of any kind common to the New Guinea rocks, and those of Southern Australia and the general aspect of both is totally different.

Notes on a Collection of Birds from Port Darwin.

By GEORGE MASTERS, Curator Macleayan Museum.

The Birds enumerated in this Paper were shot by Mr. Spalding, at or near Port Darwin, during the months of May, June, July, August, and September of the present year.

I find only one undescribed species, but a number of them are little known, and very rare in collections. I have fortunately been enabled, through the accurate observations of Mr. Spalding, to give some idea of the habits of many of the species, and of the apparent rarity or nonrarity of them all. For this reason I believe that these few notes will be acceptable to Australian Ornithologists.

1.—HALIASTUR LEUCOSTERNUS, *Gould.*

This species appears to be common near the coast, and is frequently to be seen hovering over the settlement.

2.—HALIASTUR SPHENURUS, *Vieill.*

Not very common; generally seen about Lagoons.

3.—PANDION LEUCOCEPHALUS, *Gould.*

Seen occasionally; not common.

4.—HIERACIDEA BERIGORA, *Vig. and Horsf.*

Not uncommon. The specimens obtained vary considerably in size and colour.

5.—ASTUR APPROXIMANS, *Vig. and Horsf.*

One young male only; rarely seen.

6.—BAZA SUBCRISTATA, *Gould.*

Two obtained; two others seen; frequents scrubs.

7.—STRIX NOVÆ HOLLANDIÆ, *Steph.*

The specimen obtained was shot in a tea-tree swamp; no others seen.

8.—SPILOGLAUX BOOBOOK, *Lath.*

Common; smaller in size and paler in colour than New South Wales specimens.

9.—ÆGOTHELES LEUCOGASTER, *Gould.*

Plentiful, but difficult to obtain.

10.—Podargus gouldii, *Masters*.

Four specimens of this fine and distinct species were obtained, varying but little from the type which was shot in the Gulf of Carpentaria.

11.—Eurostopodus guttatus, *Vig. and Horsf.*

One obtained; evidently not common.

12.—Caprimulgus macrurus, *Horsfield.*

Plentiful; about bamboo jungles.

13.—Dacelo cervina, *Gould.*

Not uncommon, but very wary.

14.—Todiramphus sordidus, *Gould.*

Common, and frequents dense mangroves.

15.—Todiramphus pyrrhopygius, *Gould.*

Rather scarce; frequents forest country.

16.—Cyanalcyon Macleayi, *Jardine and Selby.*

Very common; the specimens obtained are remarkably bright in colour.

17.—Alcyone pulchra, *Gould.*

Very rare; only one obtained and another seen.

18.—Artamus minor, *Vieill.*

Plentiful during the months of July and August.

19.—Artamus leucopygialis, *Gould.*

Very common.

20.—Artamus cinereus, *Vieill.*

Common during the months of August and September.

21.—Pardalotus uropygialis, *Gould.*

Plentiful; excavates a hole in the ground for its nest, similar to *P. punctatus* of New South Wales.

22.—Cracticus picatus, *Gould.*

Not very plentiful.

23.—Cracticus argenteus, *Gould.*

Rather more numerous than the last.

24.—Cracticus Spaldingi, n. sp.

All the upper surface of a dull black, margins of the feathers brighter, and with a slight glossy hue; under surface, wings, and tail of a dull rusty-brown, under tail-coverts black; bill, bluish black; legs and feet of the same colour. Total length, 14 inches; wing, $7\frac{1}{2}$; tail, 6; tarsi, 1·7; bill from forehead, 2·4.

At first sight this bird might be taken for Cracticus Quoyii, *Lesson*.

The very much larger bill and tarsi, and the rusty-brown hue, will at once serve to distinguish it from that species. The base of all the feathers above and below are of a dull white, and not slaty-brown as in *C. Quoyii*.

I have named this species after its discoverer, Mr. Edward Spalding.

25.—Grallina picata, *Lath.*

Common everywhere.

26.—Graucalus melanops, *Lath.*

Very plentiful.

27.—Campephaga rufiventris, *Pucheт.*

Common in the scrubs.

28.—Campephaga humeralis, *Gould.*

Common during July and August; no adult males obtained or seen.

29.—Pachycephala simplex, *Gould.*

Pretty common.

30.—Pachycephala falcata, *Gould.*

A few obtained; not plentiful.

31.—Colluricincla brunnea, *Gould.*

Very common.

32.—Colluricincla parvula, *Gould.*

A few fine specimens obtained.

33.—Chibia bracteata, *Gould.*

Very plentiful.

34.—Rhipidura dryas, *Gould.*

35.—Rhipidura isura, *Gould.*

Both very common.

36.—Sauloprocta picata, *Gould.*

Rare; two obtained; only two others seen.

37.—Seisura nana, *Gould.*

Common.

38.—Piezorhynchus nitidus, *Gould.*

Plentiful in the mangroves.

39.—Myiagra concinna, *Gould.*

Common.

40.—Micræca flavigaster, *Gould.*

Rare; generally found about mangrove creeks.

41.—Gerygone chloronota, *Gould.*

A few obtained; not very plentiful.

42.—Smicrornis flavescens, *Gould.*

Common during August and September.

43.—Malurus cruentatus, *Gould.*

Rare near the coast; more common inland.

44.—Anthus Australis, *Vig. and Horsf.*

Very rare, and very diminutive in comparison with New South Wales specimens.

45.—Ptenœdus rufescens, *Vig. and Horsf.*

Not common; seen occasionally about long grass.

46.—Sphenæacus galactotes, *Temm.*

Not uncommon about long sedgy grass near water.

47.—Poëphila gouldiæ, *Gould.*

Very rare, and seen only upon two occasions.

48.—Poëphila acuticauda, *Gould.*

Three obtained, and the only ones seen.

49.—Poëphila personata, *Gould.*

Also very rare.

50.—Donacola castaneothorax, *Gould.*

Very common.

51.—PITTA IRIS, *Gould.*

Frequents thick bamboo jungles. Scarce, and difficult to obtain.

52.—CHLAMYDODERA NUCHALIS, *Jard. and Selb.*

Seen occasionally, but never very common.

53.—MIMETA FLAVOCINCTA, *Vig. and Horsf.*

Very numerous.

54.—MIMETA VIRIDIS, *Lath.*

An occasional visitor. Generally in pairs.

55.—CORVUS AUSTRALIS. *Gmel.*

Scarce, and very shy.

56—POMATOSTOMUS RUBECULUS, *Gould.*

Frequents lightly timbered country, generally in small flocks of seven or eight.

The nest is dome-shaped, of large size, outwardly composed of small sticks, and lined with fine soft grass.

The eggs are thirteen lines in length by ten lines in breadth, are of a light brown, clouded with a darker tint, and streaked both longitudinally and transversely with wavy almost black lines.

57.—GLYCIPHILA FASCIATA, *Gould.*

Frequents edges of jungles. Not uncommon.

58.—STIGMATOPS OCULARIS, *Gould.*

59.—STIGMATOPS SUBOCULARIS, *Gould.*

Both plentiful.

60.—STOMIOPTERA UNICOLOR, *Gould.*

Also very common.

61.—CONOPHILA ALBIGULARIS, *Gould.*

Seen occasionally, not particularly common.

62.—MYZOMELA OBSCURA, *Gould.*

Frequents flowering trees, pretty plentiful.

63.—MYZOMELA ERYTHROCEPHALA, *Gould.*

Not common, frequents high mangroves.

64.—ENTOMYZA ALBIPENNIS, *Gould.*

Rather scarce, generally seen in pairs.

65.—Melithreptus albogularis, *Gould.*

Common.

66.—Zosterops luteus, *Gould.*

Rare, only two obtained.

67.—Climacteris melanura, *Gould.*

Frequently seen, but not very plentiful.

Mr. Gould's description has been taken from a male, which has the whole of the throat white, each feather being broadly margined with black. The female differs from the male in having the chin and fore part of the throat white; the hinder part is also white, but each feather is very broadly margined with a rich chestnut brown.

68.—Sittella leucoptera, *Gould.*

Rare, three specimens obtained.

69.—Cacatua galerita, *Lath.*

Very plentiful.

70.—Cacatua sanguinea, *Gould.*

During the month of July this species was to be seen in flocks of thousands.

71.—Cacatua roseicapilla, *Vieill.*

Rare, occasionally seen in small flocks.

72.—Calyptorhynchus macrorhynchus, *Gould.*

Common.

73.—Ptistes coccineopterus, *Gould.*

Common.

74.—Platycercus venustus, *Kuhl.*

Rather scarce, and very local.

75.—Trichoglossus rubritorquis, *Vig. and Horsf.*

76.—Ptilosclera versicolor, *Vig.*

Both species very common.

77.—Ptilinopus Ewingii, *Gould.*

Plentiful, but rather difficult to obtain.

78.—Myristicivora spilorrhoa, *G. R. Gray*

A few seen.

79.—PHAPS CHALCOPTERA, *Lath.*

Rare near the coast, common inland.

80.—GEOPHAPS SMITHII, *Jard. and Selb.*

Very plentiful.

81.—CHALCOPHAPS LONGIROSTRIS, *Gould.*

Common in the brushes.

82.—ERYTHRAUCHŒNA HUMERALIS, *Temm.*

83.—GEOPELIA PLACIDA, *Gould.*

Both pretty common.

84.—MEGAPODIUS TUMULUS, *Gould.*

Rather scarce. No recent mounds seen.

85.—SYNOICUS SORDIDUS, *Gould.*

Seen occasionally.

86.—DROMAIUS NOVÆ HOLLANDIÆ, *Lath.*

Rare near the coast, plentiful inland.

87.—ŒDICNEMUS GRALLARIUS, *Lath.*

Common.

88.—ESACUS MAGNIROSTRIS, *Geoff.*

Not plentiful. Seen occasionally on the reefs.

89.—LOBIVANELLUS PERSONATUS, *Gould.*

Common.

90.—OCHTHODROMUS INORNATUS, *Gould.*

91.—GLAREOLA GRALLARIA., *Temm.*

Not plentiful. Both seen occasionally in small flocks.

92.—HIMANTOPUS LEUCOCEPHALUS, *Gould.*

Rare. In the young the top of the head and the back of the neck are grey.

93.—NUMENIUS UROPYGIALIS, *Gould.*

94.—NUMENIUS MINOR, *Müller.*

Rather plentiful about fresh water lagoons, also frequents the sea-shore and reefs.

95.—PARRA GALLINACEA, *Temm.*

Rare; only seen about one lagoon.

96.—Erythra quadristrigata, *Horsf.*

One obtained, and the only one seen.

97.—Grus Australasianus, *Gould.*

Rather plentiful, but very wary; an egg only of this species obtained.

98.—Herodias picata, *Gould.*

99.—Herodias melanopus, *Wagl.*

Both kinds rather plentiful about the fresh water lagoons, but difficult to get.

100.—Nycticorax caledonicus, *Gmel.*

Not uncommon, but rarely seen.

101.—Butoroides flavicollis, *Lath.*

Not plentiful.

102.—Nettapus pulchellus, *Gould.*

Very common on fresh water lagoons; ten fine specimens obtained.

103.— Tadorna radjah, *Garn.*

Seen occasionally; five obtained.

104.—Phalacrocorax melanoleucus, *Vieill.*

105.—Phalacrocorax stictocephales, *Bonap.*

Not very plentiful, and frequent both salt and fresh water.

106.—Ploius Novæ Hollandiæ, *Gould.*

Not common; one female obtained.

A General Account of the Flora of Tropical Queensland. By F. M. Bailey, Esq., Botanical Gardens, Brisbane (Corresponding Member of the Society.)

If we look back some thirty or forty years we can scarcely now believe that it was often then said that the Australian flowers were without beauty or fragrance, yet nevertheless such was the cry, as many of us can well remember. Of timber trees also we were said to possess but few, just Gums and Wattles, the wood of which was thought to be too heavy and hard ever to be brought into much use. But now what a change has taken

place. Our Eucalypts and a few others of our timber trees are sought after for planting in all parts of the Globe, where there is the least chance of their succeeding. Tree after tree is now being brought into use, and as each becomes better known, growing the more appreciated. In our early days of colonial life little was really known of the flora of Australia, although many of the plants were named and classified. The writings of the few botanists who had approached the subject were scattered and confused. But, thanks to the persevering zeal of Baron von Mueller of Victoria, aided by a few others, these early writings have been brought together, and the Flora carefully collected and preserved, by which means the way has been paved for the grand work now in course of publication by G. Bentham, Esq., a gentleman of world-wide reputation as a botanist. With this work, the *Flora Australiensis*, at hand, together with the various writings of Baron Mueller, the botanical student of the present day has his path cleared of many troubles and perplexities. Yet he will find difficulties still in determining his plants, some being caused by the great diversity of form assumed by the same plant as found within or without the tropics. In the Orchids this is very marked. No one seeing for the first time *Dendrobium tetragonum*, A. Cunn., in the tropics would think it was identical with the more southern plant; the same may be said of *D. teretifolium*, R. Br.; both plants being so much finer in the north. It will be remembered that it was this deviation from the normal form which led Sir W. J. Hooker, when he first flowered our common variety of *D. speciosum*, Sm., to suppose it a new species.

I also found on the ranges near Cardwell, a well-marked variety of this species, and under the impression of its being a distinct species described it under the name of *D. fusiforme*. This variety differs from all others in the whole plant being more lax in its growth. The stems vary from 3 to 12 inches in height, are quite fusiform, deeply corrugated, often of a dark color, and at times having a tendency to form pseudo-bulbs at their base; the leaves are from 2 to 7, distichous at the summit

of the stems, ovate-oblong, acuminate and undulate, of a thin texture compared with other forms of *D. Speciosum* The flowers also are much more delicate. Our common Elkshorn fern, *Platycerium alcicorne*, Desc., on account of its fronds in the tropics being at times, and especially when found growing on logs near the ground, of a much thicker substance than elsewhere, has been thought to be a distinct species, and named as such in some of our gardens. It is this luxuriant growth which astonishes the traveller on first seeing tropical vegetation. Who can see a tree of *Pittosporum rubiginosum*, A. Cunn., with its bunches of large orange-coloured terminal fruit nestling in its magnificent foliage, which is so membranaceous that it waves with the least puff of wind, without admiration? These fruits, although so tempting, are not fit to eat. But this is not the case with all our tropical fruits, several being excellent. A species of *Antidesma*, *A. Dallachyanum*, Baill., produces a fruit which will doubtless some day be collected, and be made into preserves for exportation. The tree is an abundant bearer, and the fruits are equal in size to the European Cherry. Another of this genus *A. erostre*, F. von M., bears a smaller fruit, resembling the Red Currant of Europe; it possesses an agreeable acid, and would doubtless make a fine jelly. The shrub grows from 15 to 20 feet high, and when laden with fruit has a very pretty appearance. Making one's way through these northern scrubs, one is often amazed at the singular forms of vegetation there displayed. As for instance, the mode of flowering of *Eugenia cormiflora*, F. von M. The flowers of this tree are large, of a white or delicate pink color, but instead of being produced on the branches of the heart, they form a belt round the trunk—say, two feet wide, at about three or four feet from the ground, and often 20 feet below the lowest branch. The stems of the trees, as also the old logs of these scrubs, will be found of special interest to the botanist; here he will fall in with his Epiphytes, Lichens and Fungi. Of these latter he will find many beautiful examples, for instance, the shining fungus *Polyporus lucidus*, Fr., which has the

appearance of only just having left the hands of the polisher; and this beautiful species may be met with at times 18 inches in diameter, though those of 3 or 4 inches are by far the most brilliant. A large species of *Clavaria*, resembling masses of coral, is sure to attract attention. This species will only be found where the scrub is dense and damp, and on logs which are much decomposed. In this situation may often be seen a large white (when fresh) species of *Hypoxylon*. This and the last species are thought by C. E. Brooms, Esq., of Bath, England, a great authority on Fungi, and to whom I am indebted for most of my knowledge in mycology, to be new species. Here also the Jew's ears fungus, *Exidia auricula Judæ*, Fr., will be seen in abundance. This species is said to be exported from Tahiti to China to be used in the preparation of soups. *Hirneola polytricha*, Mont., is a somewhat similar fungus, but usually met with in more open country, and is easily distinguished by the velvety hairs of its upper surface. Among the beauties of this family must be reckoned the large goblet-formed *Thelephora lamellata*, B. and C., which at times will be found to measure near a foot across—but nothing I think can surpass the beauty of a log covered with *Lentinus descendens*, Fr. This species is of a cream color, and has not the rough exterior of the several other Australian species, neither does it form so complete a funnel. *Polyporus fruticum*, Berk., is a most extraordinary fungus, that attaches itself to the small branches of the heads of some of our scrub trees, giving to them the appearance of being laden with fruit. This species is of a very light spongy substance, and from 1 to 4 inches in diameter. Before quitting this curious family of plants, I must point out a lovely little pure white-capped species to be usually found on the loose dark brown bark of *Wormia alata*, *Laschia Thwaitesii*, B. and Br. The many interesting representatives of this much neglected family in Australia will some day yield a rich harvest to the Mycologist.

Among the many singular plants met with in Northern Queensland, none are perhaps more grotesque in appearance than the thick fleshy *Hydnophytum formicarum*. F. v. Muell.,

an epiphyte usually met with on the tea-trees. At first sight one would imagine he had fallen in with one of the fleshy stemmed Euphorbias, common to South Africa, but should he be fortunate enough to meet with it in flower he would at once find it to belong to the *Rubiaceæ*, an order to which belong many of our northern timber trees. The thick gouty stem, often hollow, and the close mat of roots, together with the loose bark of the tea-tree, its favorite support, are taken advantage of by a small black ant which makes it anything rather than pleasant to collect specimens of this vegetable curiosity. In close proximity to the last, but usually found on trees having a close hard bark, is often to be seen an interesting orchid *Sarcochilus phyllorrhizus*, F. v. Muell. So unlike indeed is this to a phænogamous plant, that while at Trinity Bay I got out my knife and began to cut it off the close bark of an *Excœcaria* for a Lichen before seeing my mistake. The flattened roots in no way resemble a leaf, but doubtless they perform all the functions of that organ. They adhere so closely to the bark as to be removed with difficulty, and resemble rather the thallus of a Lichen than the roots of an orchid. Speaking of curious epiphytes *Dischidia nummularia*, R. Br., and *D. timorensis*, Decaisne, must not be over-looked, as both are interesting. The flowers of the last-named have as yet not been seen, but the curious pitchers it produces in such abundance point it out as a most desirable plant for decorative purposes. The first-named species produces small white flowers in abundance, which mixed with its round fleshy white leaves have a pretty appearance, especially when growing on the dark stems of the *Wormia alata*, R. Br., and from the branches of which it may often be seen hanging down in long streamers. In noticing plants of eccentric habit the root parasite, *Balanophora fungosa*, Forster, should not be over-looked. This strange plant, often on a root no thicker than one's finger, will grow to a foot or more in diameter. No botanist should travel through our northern scrubs without looking up this extraordinary parasite. It is by no means difficult to discover, for in the dense scrubs bordering rivers,

where the soil is of a light sandy nature, its thick whitish head may be frequently seen coming through the surface like large heads of asparagus. With these few short notes on some of the peculiar forms of vegetation in Northern Queensland, I will now pass on to point out a few of her magnificent flowers. Of aquatics we have some of the finest known. Take, for instance, the grand Pythagorean Bean, Pink Water Lily as it is called here, *Nelumbo nucifera*, Gærtn., which, in ancient days was so plentiful in Egyptian waters. What can equal in beauty the lagoons where this plant is in full bloom? But I would draw special attention to the splendid white flowering water-lily of the lagoons off the Barron River, Trinity Bay. In growth and general appearance this superb aquatic differs widely from all others of the colony, and this difference may be noticed as far as the eye can reach. Its leaves, instead of lying flat on the water, and floating wide over the surface of the lagoon in which it is growing, often may be seen standing up some little distance above the water, and always in a close cluster immediately over the root, giving one the idea of their having been blown in a heap by a high wind. In size the leaf equals those of *N. gigantea*, Hook., but differs from that species in the edges being much more sharply toothed, the basal lobes ending in a sharp thorn often from ½ to 1 inch long, and in the vascular structure being much stronger. The flowers are large, of a pure white, and beautifully double, and also very fragrant. Some float on the surface of the water, but the majority stand up like the *Nelumbo*. In removing the plants from the lagoons I failed to find any trace of the thick rhizome of *N. gigantea*, although I searched carefully for it at the time; but this with all my care may have been left behind. As observed by the painstaking botanist of Victoria, Baron von Mueller, to whose persevering research I must again say the botanists of Australia are so deeply indebted, this and *N. gigantea*, Hook., approach very near to *N. Lotus*, and in this I perfectly agree, and consider this white variety the nearest approach. The most common blue water-lily of Northern

Queensland is *N. cærulea*, Savigny, a quite distinct species from either of the above, and for which it could only be mistaken in a dry specimen. A minute variety of this species I met with in some of the still shallow waters of the Barron River. This variety has light blue flowers, in size and form resembling an *Ottelia*; the leaves are numerous, of a thin texture, and from 1 to 2 inches in diameter. The pretty leaves, flowers, and close growth of this aquatic would recommend it for cultivation in small aquariums, in company with another delicate aquatic *Blyza Roxburghii*, Rich. On the low sandy land near these northern swamps will be noticed a few showy plants, such as *Eurycles amboinensis*, Loud., a fine bulbous plant, which should be more frequently seen in our gardens, for both flower and leaf are beautiful. In company with this will often be found *Tacca pinnatifida*, Forst., the dichotomous ramifications of whose leaves make it a most conspicuous object. With these are also found a few terrestrial Orchids, as the pretty *Geodorum pictum*, Lindl., with its reflexed head of pink flowers and several kinds of Pogonias, the leaves of which are beautiful while they last, but usually die away before the plant comes into bloom. As the land rises and becomes more rocky the *Phaius grandifolius*, Lour., will be found in perfection, together with various Scitamineous plants as *Alpinia arctiflora*, F. von M., a species about 6 or 8 feet high, with soft velvety leaves and terminal panicle of rather large white flowers. Some other species of this genus will be seen with the genera *Musa*, *Curcuma*, *Amomum*, *Elettaria*, *Costus*, and the noble *Tapeinocheilos*, which when growing strong attains the height of 7 or 8 feet, resembling a strong '*Canna*,' but the stems are rather weak, and, failing the support of neighbouring shrubs, fall to the ground, take root at the nodes, and send up other stems to add to the mass of foliage. The spike of flowers does not, as stated in the Flora Australiensis, vol. VI., p. 267, terminate the main stem, but is borne on an independent stem of 1 or 2 feet. The spike of flowers is about 6 inches long and three through, the bracts recurved, and of a deep crimson, but the colouring is so rich that it passes description.

No botanist or lover of plants travelling in Northern Queensland should lose an opportunity of examining the rocks in our close damp gullies. For a finer sight than one of these covered with *Bœa hygroscopica*, F. v. Muell., in full flower, could scarcely be imagined; the rich deep blue flower which it bears in such profusion contrasting so well with its soft green Gloxinia-like leaves. It has often been a wonder to me that this plant has not been brought more prominently into cultivation. This may be caused by the want of knowing the proper situation for it in the plant house or garden. In its natural habitat it is found growing on the face or in the crevices of the perpendicular rock, in company with the plantain-like fern *Antrophyum semicostatum*, Blume, and the creeping ivy-like fern *Humata pedata*, J. Sm., with the beautiful feather-like *Selaginella flabellata*, Spreng. As my object in this paper is only to draw some little attention to the more curious or beautiful phenomena of our vegetation, and thus point out what a traveller through Northern Queensland should see, I only notice such trees or shrubs as produce fine, showy, conspicuous foliage, or are otherwise interesting and but little known in cultivation. Such a tree is *Hedera australiana*, F. v. Muell., which often flowers as a shrub. It has a terminal panicle of 3 or 4 feet diameter composed of pretty white flowers. The leaves are very long, and well supplied with large somewhat oblong pinnæ; and although of the same genus as the Ivy of Europe, to the unbotanical observer seems quite as distinct from it, as the *Exocarpus* from the European Cherry. In this order *Araliaceæ* is another conspicuous, tall, upright shrub of great beauty, *Astrotriche pterocarpa*, Benth. Its leaves are of a dark glossy green on the upper side, and white with a close tomentum on the under side. The unusual form (cordate-lanceolate), and length 10 inches, are sure to attract attention. It bears a large terminal panicle of dark purple flowers, seemingly speckled, on account of the numerous light yellow anthers. The two northern species of *Harpullia* have handsome foliage, *H. alata* has the rachis of its large leaf winged, and the pinnæ of *H. Wadworthii*, F. v. M., are abruptly truncate, giving a most curious

appearance to the leaf. *Weinmannia Biagiana*, F. v. Muell., is a noble tree producing, especially when young, leaves of immense size and much divided; these are also attended with broad stipules, which add much to the beauty of the object. The Davidsonia plum, *Davidsonia prurens*, F. v. M., now well known in our gardens, belongs to the same order, Sarifrageæ.

A fine shade tree, *Xanthostemon chrysantha*, F. v. Muell., rather common on some of our northern creeks, will attract the traveller's attention. This tree would be a great acquisition to our gardens and pleasure grounds, in which, if once introduced, it would soon become a general favorite, both on account of its flowers and foliage. The climbing plants, which make our jungle scrubs almost impenetrable, are in many instances very beautiful, some on account of their flowers, others on account of their fruit. Who can have seen the delicate vines *Eustrephus latifolius*, R. Br., with its broad green leaves, star-like flowers, and orange colored fruit, some of which are often seen open, displaying the glossy black seeds, without a wish that it, with a great many more indigenous plants, were more frequently to be seen in our gardens? The large *Calamus* cannot fail to be admired, especially should it be in fruit; but I would advise a wide berth being given to its long tendrils. Two small climbing beans are sure to draw the attention of the traveller. The first, *Abrus precatorius*, L., on account of its bright scarlet seeds, and the other, *Rhynchosia Cunninghamii*, Benth., for its brilliant blue seeds; the pods of these two climbers open with age, and display their pretty bright seeds, held by their funicles for a considerable length of time, like many of the Acacias. *Faradaya splendida*, F. v. M., a verbenaceous rampant climber, bearing large white flowers, is thought by some the handsomest climber of the north. It usually flowers about September and October.

Ferns will be found to constitute the greater portion of the plants with creeping stems that clothe the trunks of our scrub trees. In some of these the fronds will be found small, and adhering like a thin skin to the bark of the tree, as the

beautiful little *Trichomanes peltatum*, which I lately found on the trees in some of the deep gullies of the Trinity Bay Range. Of others, the fronds stand out from the tree, 3 or 4 feet, as in the case with the broad pinnatifid-fronded *Selliguea pothifolia*, J. Sm., and the equally beautiful pinnato-fronded *Lomariopsis Brightiæ*, F. v. Muell., and *Stenochlæna scandens*, J. Sm. *Pothos*, *Rhaphidophora*, *Piper*, &c., are plants having similar habits, and will be found mixed with the above. Many of our tropical maritime trees and shrubs possess great beauty, and might, with advantage, be introduced into arboriculture; but there seems to be a strong belief that plants of the sea-coast, and especially those of coast swamps, will not thrive, but in similar situations. I may take this opportunity to state in contradiction to this generally received opinion, that while at Port Mackay a few years back, I collected out of a salt-water swamp some young plants of *Heritiera littoralis*, Ait. (Red mangrove), and brought to Brisbane, where they were potted, and kept in a *bush house* for a season, and afterwards planted out in a comparatively dry situation, where they are now, after two or three years, looking strong and healthy. The same success has attended the introduction of the *Wormia alata* into our gardens. It is probable that equal success might attend the introduction of the following coast plants: *Tournefortia argentea*, Linn. f., a large growing succulent shrub densely covered with a silvery tomentum, the flowers are small, white, in large terminal panicles: *Guettarda speciosa*, Linn., a small rounded tree, with roundish leaves, 6 inches in diameter, and showy white flowers that are succeeded by globular fruit, somewhat similar in appearance to the fruit of the *Calophyllum*: *Acanthus ilicifolius*, L., a shrub of 6-7 feet, with large holly-like leaves and terminal spikes of bright blue flowers. The leaves of this shrub are most variable at times, being quite entire on the same plant with leaves bordered by sharp prickly teeth: *Scævola Kœnigii*, *Vahl.*, a large succulent shrub often met with along the sandy beach. It at times goes by the name of Native Cabbage. Its large rich green foliage and pretty axillary flowers are sure to attract attention.

I cannot close this paper without noticing one more coast plant, *Entada Scandens*, Benth., for to see the trees covered with this immense climber, with its long beans often 4½ feet long hanging from their branches, is a sight that will not easily be forgotten.

In conclusion, I may hope that although only a very short sketch has been taken of our North Queensland plants in this paper, enough has nevertheless been said to show that a wide and glorious field is open for the botanist and others who delight to contemplate "the works of an Almighty hand."

Descriptions of three supposed new species of Birds from the New Hebrides.

By E. P. Ramsay, F.L.S.

I purposed this evening to give an account of a small collection of Birds made by Dr. Mackinlay, containing about 20 species, from some of the seldom visited Islands of the New Hebrides Group, but finding less time on my hands than I anticipated, and rather than hurry over the matter, I shall confine myself to describing two or three of those which appear to me to be new. At our next meeting I hope to give a complete list of all the species obtained.

Macropygia mackinlayi, sp. nov.

The whole of the upper surface dark ashy brown, darker in the wings, the 2nd, 3rd, and 4th primary quills with an unconspicuous narrow line of white on the edge of the outer web, the rump and upper tail-coverts, wing-coverts and scapularies minutely freckled with ashy white, giving a powdery appearance to those parts; the under surface is of a light ashy brown, blackish in the centre of the chest feathers which are forked; the throat and the whole of the under surface minutely freckled with a light ashy tint, under wing-coverts and inner webs of quills ashy white; tail ashy brown, lighter below the outer feathers, above blackish, with the tips ash white and an oval cream-colored patch occupying the central portion of the feathers

and extending over the outer web to the base; the blackish colour from the inner web extends in a wedge-shaped stripe along the shaft; the next feather similar, but without the whitish mark on the outer web; an oval oblique spot of cream color on the inner web only on the third quill, the 4th, 5th and 6th without spots and of a uniform ash brown; under tail-coverts creamy white; tarsi olive brown; bill black.

Total length, 12 inches; bill, from forehead, 0·6 inch; from base of nostril, 0·5 inch; wing, 6·1 inches; tail to central feathers 6·8 inches, to outer 3·6 inches; tarsi 0·85 inch; middle toe and nail, 1·05 inches.

Sex. Female.

Hab. Island of *Tanna.*

This interesting species has the peculiarity of having the feathers of the chest forked, as in some of the *Ptilonopi.*

I have named it in honor of Dr. Mackinlay, of H. M. S. Nymphe, an officer much attached to the science and the study of ornithology, and to whom the Museum is indebted for many fine specimens collected in the S. S. Islands.

MACROPYGIA RUFA, SP. NOV.

The whole of the upper surface chocolate brown; the tail-quills washed with ashy brown; primary coverts; primary and secondary quills, dark ashy brown; tail above washed with the same ashy tint; the axilliaries, under tail and wing-coverts, and inner webs of the quills towards the base deep chocolate red; all the under surface chocolate brown, paler on the throat; minutely freckled on the chest and sides of the neck and face, with ashy; the feathers on chest slightly forked. The outer tail feathers have a transverse oblique slate-colored band towards the tip, extending on the inner web towards the base; the 2nd and 3rd similar to the 4th has some ashy slate-colored shadings on the inner web towards the tip; bill black, legs and feet greyish flesh color.

Total length, 11 inches; wing, 5·7; tail, 6·1; tarsi, 0·8; bill from forehead, 0·65; from base of nostril, 0·5; middle toe and nail, 1 inch.

Hab. Havannah Harbour, Sandwich Island.

Notwithstanding the great differences in the coloration between this and the previous species (*M. Mackinlayi*) from Tanna, they may hereafter prove identical; the style of markings are very similar; but the bill in *M. rufa* is stronger and more rounded at the tip; both have comparatively weak bills, and on the whole are very slightly built birds.

CHALCOPHAPS CHRYSOCHLORA, *Sandwichensis Var.*

This variety is in plumage like *C. chrysochlora*, but my specimens have no white on the shoulders, the bands on the rump are narrower; the interscapular region, the back of the head and neck, of a darker and duller chocolate brown; the lower part of the breast and the abdomen washed with a more ashy tint; and the coloration on the whole duller. In size the bird is smaller by one inch in the total length. Bill and legs reddish.

Total length, 8·5 inches; wing, 5·3 inches; tail, 3·2 inches; tarsi, 1 inch; bill, from forehead 0·8, from base of nostril 0·6 inch.

Sex. — ?

Hab. Vela Harbour, Sandwich Islands.

I subjoin the measurements of an average-sized specimen of Chalcophaps chrysochlora from N. S. W. for comparison.

Total length, 9 inches; wing 6, tail 3·6, tarsi 1·1 inches; bill from forehead 0·86, from base of nostril 0·7 inch.

This is probably the species from Tanna referred to as *C. chrysochlora*, var. by Dr. Gray, in P. Z. S., 1859, p. 165. See Catalogue of Birds of the Tropical Islands of the Pacific.

EXHIBITS.

Mr. Ramsay exhibited the new Birds referred to in his paper. Mr. Masters exhibited two Volutes—*V. Turneri* and *V. flavicans*, and two strange-looking sponge-bearing Crabs of the genus *Maia*.

MONDAY, 31st DECEMBER, 1877.

The Hon. W. Macleay, F.L.S., in the Chair.

Dr. O'Connor, of Wagga Wagga, was elected a Member of the Society.

DONATIONS.

From Dr. Hector, F.R.S., F.G.S., &c., of Wellington, a large and valuable donation of Publications referring to the Geology and Natural History of New Zealand, viz. :—

Reports of Colonial Museums and Laboratory, from 1866-76; Paper on the Geographical relations of N. Z. Fauna, by Captain Hutton; on N. Z. Coleoptera, by F. P. Pascoe; on Cnemiornis Calcitrans, by J. Hector; on Cnemiornis, showing its relation to Natatores, J. Hector; on a Fossil Crab; Report on Oyster Cultivation in N. Z., 1877; on the Anthribidæ of N. Z., by Dr. Sharp; on Priocella Antarctica, and on N. Z. Ichthyology, J. Hector; Geology of N. Z., Hochstetter and Petermann; Coal Deposits, J. Hector; Geological Report on Lower Waikato, Captain Hutton; Geological Survey and Exploration, &c.; Catalogue of N. Z. Exhibits and Awards, 1865, with Appendix on Minerals; Meteorological Reports, 1868-75; Phormium Tenax, as a Fibre Plant; Mollusca, by Martens; Marine Mollusca, Captain Hutton; Land Mollusca; Whales and Dolphins; Echinodermata; Stalk and Sessile-eyed Crustacea, by Miers; List of Insects, Capt. Hutton; List of Birds, Capt. Hutton; List of Fishes, Capt. Hutton and Hector; New Zealand, Hochstetter; Parliamentary Papers; State Forests; Analysis of Metalliferous Rocks; Introduction of Californian Salmon; Report of New Zealand at the Philadelphia Centennial Exhibition, 1876; on Fossil Reptilia, J. Hector; on Early Forms of Stone Implements; 3 Geological Maps of New Zealand; 7 Vols., with Index, of the Trans. and Proceedings of the New Zealand Institute.

From Professor R. Tate, Adelaide, 2 New Helices, from S. Australia.

PAPERS READ.

Descriptions of three new species of Helix, from South Australia.

By Professor RALPH TATE, University of Adelaide.

HELIX INDUTA.

Shell umbilicated, somewhat conoidly depressed, rather thin, covered with a dull brown epidermis, raised into reticulate or scaly lamellae, beneath which the test is coarsely and irregularly striated and distantly granulated; under surface, moderately glossy, pellucid and striated; spire slightly elevated, widely conical, obtuse; whorls 5, flattened, slightly imbricated and margined at the suture; last whorl rounded, rather depressed above, and angulated at the periphery; aperture rotundately lunate; peristome simple, thin, and straight; columella reflected over $\frac{1}{3}$d. of the moderate umbilicus.

Animal.—Foot with grey granulations and black interspaces, under side greyish; tentacles and muzzle black, darker than foot, but the collar of the same color as foot; color of shell with containing animal black-brown.

H. induta is related to *H. Lincolniensis*, Pf., from which it differs most particularly in its angulated whorls.

Dimensions.—Diameters ·51 and ·5, Height ·35 of an inch.

Habitat.—Among rocks and under stones about the north Para River, and ascending to the summit of Kaiserstuhl (about 2000 feet elevation). Many examples.

HELIX PICTILIS.

Shell umbilicated, globosely-conical, keeled, thin, ornamented with distant, strong, unequal, regular curved ribs; the interstices crossed by minute and close raised lines, which produce in certain positions a satiny lustre, colored above with light chestnut and pale horn or colorless segments; spire broadly conical obtuse; whorls 5, flattish, the last angulated, the carina denticulated; base slightly sloping, finely ribbed, colored as above; aperture angular, broadly lunate; peristome thin, simple; columella slightly reflected, umbilicus small.

This species closely resembles *H. Penolensis*, Cox, but differs particularly in its coarser ribbing, in its coloration and by the presence of transverse striæ.

Dimensions.—Diameters ·15, and ·14, height ·125 of an inch.

Habitat.—Among herbage on the slopes of the Cape Northumberland cliffs; also fossilized in the same rocks which are indurated blown sands of Pleistocene age. Numerous examples.

HELIX ARENICOLA.

Shell umbilicated, depressly-globose; spire moderately raised, ornamented with strong and somewhat regular curved striæ, passing into ribs, very minutely transversely striated and granulated; color semi-transparent horn; whorls 4½, rounded, gradually increasing, suture impressed; aperture rounded, entire; lip simple, columella margin everted; base convex, slightly shining, striated; umbilicus broad, exposing all the whorls.

Seems to have some affinity with *H. Microsmos*, Cox, but differs in its wide umbilicus; it closely resembles the European *H. rupestris*, but the spire is more elevated, the whorls rounder, of smaller size, and the riblets not so coarse.

Dimensions.—Diameters ·085 and ·08, Height ·065 of an inch.

Habitat.—About roots of shrubs on the sand-dunes, Holdfast Bay, and Surveyor's Point, Yorke's Peninsula; and among rocky debris, River Murray cliffs at Mannum. Numerous examples.

On the Extratropical Corals of Australia.

By the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., Cor. Mem. Linn. Soc., N. S. W.; Hon. Mem. Royal Soc., N. S. W., Victoria, Tasmania, &c., &c.

Plates IV., V., & VI.

The *Madreporaria* or stony corals have two very distinct and very diverse habitats. One is for the most part tropical, the corals forming immense masses or reefs which form barriers, islands, fringing reefs, &c., of such extent as to occupy a very large and important portion of the surface of the Globe. The other is the home of small, simple or compound corals which live on the floor of the ocean in areas remote from coral reefs, and at all temperatures and depths even as much as 800 fathoms. The dredgings of the "Lightning," "Porcupine," "Challenger," and that of M. de Pourtales in the Gulf Stream, have made known a great number of these hidden forms of life. They have also cleared up many of the obscurities which a limited knowledge of species necessarily gave rise to. They have largely increased the list of both genera and species of corals. They have shown some of the extent to which variation affects those already known, thus uniting many forms hitherto regarded as distinct. Up to this time however, all these discoveries have had but little effect on the knowledge of Australian forms. It is true that the "Challenger" has visited these seas, but with what result may not be known for a long time. I may say that the extratropical *Madreporaria* of Australia have been literally untouched. Yet a special interest is attached to them on account of what has been made known through geological researches. It has been ascertained that our Eocene and Lower Miocene strata are particularly rich in the kind of corals with which we have to deal. As a test for the age and relations of the deposits no fossils could be more suitable. So far as they had been studied they have led to remarkable results. We have to thank Professor Duncan for being the first to enter upon the field. His industry and painstaking care, together with his almost unrivalled knowledge and experience in this department have been devoted to the subject,

and Australian science is deeply indebted to him for what he has effected. But while the fossil organisms have thus received such attention, the living forms have remained unknown, and this anomaly was the more unsatisfactory as consequently no satisfactory conclusion could be formed as to the age of the beds. Except a few forms of a wide range which had been dredged up in tropical seas, none of our corals were known to be living, and whether any or all of them might not be found still living in Australian seas there were no data upon which even to found a guess. It is true that some Australian corals had been cited by Messrs. Edwards and Haime from the explorations of various naturalists, most of all Messrs. Quoy and Gaimard, but none of them were deep-sea forms, and only very few Australian, New Zealand being the place where the most abundant collections were made. Professor Duncan has with great care extracted all the corals referred to as Australian from various works, principally however from the *Histoire Nat. des Corallaires* of Messrs. M. Edwards and Haime. This list, as I shall show hereafter, gives no reliable information. Naturalists have had a custom of noting as Australian all the species that were found there. This would convey no more information than if a species were labelled Africa. The result is that tropical and reef building forms have been confounded with simple and extratropical *Madreporaria*, which does not give the slightest help towards elucidating the relations of our Australian fossil forms. We must add to this the confusion arising from geographical mistakes, very common among the older French naturalists. The species are often called Australian, which come from the South Pacific Islands, and "Terre de Van Dieman" of North Australia has been cited as Tasmania. I need hardly say that with my limited opportunities for comparison, &c., I did not think of approaching the subject with a hope of throwing any light upon it, or lessening the confusion. In my geological and zoological studies extending over 23 years of a life in Australia, I have often met specimens of corals both living and fossil; some of them I sent home to men of science, and some I have kept by me or presented to

museums. I was not aware of the extent of the knowledge thus acquired until I compared my own notes and specimens with Professor Duncan's list (*Quart. Jour. Geol. Soc.*, 1870, p. 311.) Then I found that I had considerable material, but which I scarcely knew how to use. If I could have sent it all to London I should have served the interests of science better than I can do now; but this was out of the question, for many of my notes and drawings referred to specimens in public museums or private collections which I could not dispose of as I wished. At this time the Hon. W. Macleay placed at my disposal for examination and description his small though interesting and valuable collection, and this made me decide upon trying to draw up the present monograph. It will be due to men of science to mention the only works I have been able to consult in preparing this monograph. They are as follow: Histoire Nat. des Corallaires, 3 vols., and Atlas of Mess. Ed. and Haime; the monographs of the same authors in the Palæontographical Soc. publications; the monographs of Professor Duncan in the same, as also all his papers in the Journal of the Geological Society; all the papers of various authors in the Annals of Nat. Hist.; the Proceedings and Transactions of the Zool. Soc. London; the Annales des Sciences Nat.; the Voyage de l'Astrolabe; Voyage de la Coquille; Sir W. Thomson's Depths of the Ocean; Dana's Coral Reefs; Darwin's Coral Reefs; Ellis and Solander's Zoophytes; Gosse's Actinologia Britannica; Juke's Voyage of the Fly; Voyage of Rattlesnake; Lamarck His. Nat. des Ani. s. vertebres, 2 edit., par Deshayes; Gray's Brit. Museum Catalogues and a few Articles in Nature; Prof. Verril's essays in the Amer. Jour. Science and Art, the Geological Magazine, and a few other serials.

A study of the Australian living forms has shown that some of the fossil species thought to be extinct are still existing. They are *Trochocyathus Victoriæ*, *Sphenotrochus variolaris*, nobis. There are also forms which have a remarkable relation with extinct species, viz: *Conocyathus zelandiæ*, Duncan, which was not known as Australian, and which bears a strong resemblance to the extinct European Miocene form, *C. sulcatus*. There are two if not three species of

Conocyathus amongst our fossil corals. There are two new species of *Deltocyathus* amongst the *Madreporaria Aporosa;* I have found only one species of *Balanophyllia* which is all the more remarkable as the genus is so abundantly represented in the Muddy Creek and Geelong strata. But I have been able to add a new species to each of the remarkable and rare genera, *Endopachys* and *Heteropsammia.* It would be almost useless to form any conclusions from the very few observations which have resulted in the discovery of a few new species, yet I may say that what we have discovered after a very few dredgings, show us plainly what might be expected from an extended series of operations. So far as we have learned the coral fauna of New Zealand is very distinct from the Australian. If the observations of Messrs. Quoy and Gaimard are to be relied upon, the northern end of New Zealand possesses forms which are never found out of the tropics in Australia, and very far within the tropics as well. I refer to *Porites Gaimardii* and *Polyphyllia pelvis.* If they were not found alive I should doubt if they were not brought from some of the Pacific Islands. Among the simple corals, *Conocyathus zelandiæ* is the only form which I know of as common to both Australia and New Zealand. We have no data for showing what relation there is between Tasmania and Australia in the coral fauna; but as most of the simple corals have a wide range and do not seem to be restricted by a cold temperature, there is probably very little difference in the species.

The only corals on the south and S.E. coasts of Australia which could in any sense be called reef-building forms, are one or two species of *Stylaster*, and one or two of *Plesiastræa.* Both of these are littoral, and grow in tufts or small masses, but never in anything more than the merest patches. *Stylaster*, though not uncommon about Port Jackson, has not been found as far as I am aware on the south coast, while *Plesiastræa* seems to extend from Port Jackson right round to South Western Australia.

Amongst the new species here described there are two for which I have been obliged to erect two new genera. One is a parasitic coral of minute size which has grown on the base of

that singular Polyzoary named by Prof. Busk, *Lunulites cancellata*. The other is a form which approximates to *Ceratotrochus* but differs in the absence of any special ornamentation on the ribs and the wide deep calice, with a very large hispid and spongy columella, and a broad attachment.

In referring to these corals as extratropical, I must define what I mean by the term. The reef-builders are not exactly confined to the tropics in N.E. Australia; they extend a little beyond it and may be found as low as lat. 28° S., or even lower. It seems to me that there was formerly a prolongation of the Barrier Reef to the south. If the map of N.E. Australia be consulted it will be seen that to the north of Moreton Bay there is a large island jutting out somewhat east of north. This is marked on the maps as Great Sandy Island, but is locally known as Frazer's Island. It is separated from the coast line on the south, by Wide Bay. The land on both sides seems to consist of immense drifts of red and yellow sand irregularly stratified. To the north the island ends in a coral reef called Break-Sea Spit, and then the reefs are continued with long interruptions in islands and coral shoals, including Lady Eliot's Island, Bunker's group, Capricorn group, &c., until the Barrier Reef is reached. Strictly speaking, Wide Bay may be said to be the commencement of that inner channel which continues inside the Barrier Reef right up to Cape York, a distance of about 1200 miles. It would be more convenient therefore, in the study of Australian corals, to designate as belonging to the extratropical fauna, all south of Breaksea Spit. Of the west side I can say little or nothing. The shell fauna of Perth has certainly more of the Indian Ocean in its *facies*, than Australia; and the raised beaches of Freemantle are unquestionably tropical in their fauna. I should incline to the opinion that the extratropical fauna should not be made to extend beyond the south west cape, Cape Leuwin. The coral reefs of Houtmans Abrholhos are in lat. 28·59.

I must add a few words as to the classification of corals which I am sure will become daily a greater matter of difficulty, as the variation of different species comes to be better understood. In

spite of the immense work that has been done by Messrs. Dana, Milne Edwards and Haime, and the careful elaboration that has followed from such industrious observers as Professors Duncan, Verrill, Messrs. Gosse and Wall, there is a very great deal of confusion and obscurity attached to the subject. It will be seen in this essay that the classification is founded on the presence or absence of pali, columella, costæ, epitheca, endotheca, synapticulæ; the structure of the wall and character of the endotheca, the edges of the septa and the mode of division or spreading. Now the nature and offices of the various organs first enumerated, are not understood, and the organs themselves are not defined in a satisfactory manner. Pali may be regarded by some as lobed septa, or *vice versa*; epitheca is a mere external secretion to protect against injury, an organ often present and absent in the same species; the septa united in the centre may be called a columella, or it may then be stated to be absent. Endotheca and synapticulæ may graduate into one another, and synapticulæ may result from the union of granules on opposite septa, and thus two such widely sundered groups as Turbinolidæ and Fongidæ, be united.* The costæ also are subject to great variation, and in a species of *Cylicia* to which reference will be hereafter made, one of the many calices had a series of buttress-like costæ thrown out on the outside of the epitheca. All these things show that a sound classification of the *Madreporaria*, is yet to be found. The work of Messrs. Edwards and Haime is a wonderful monument to their genius and industry; but like the beautiful and apparently simple system of Linnæus, is too artificial to be practically useful as the knowledge of the subject increases.

The greatest difficulty with me has been the pali. Professor Duncan (in the *Proc. Zool. Soc. for* 1876, *p.* 435), says:—"There is some difficulty in classifying certain species on account of the very arbitrary manner in which certain modifications of the internal parts of the septa are decided to be pali. Pali, in the strict and proper sense, should arise from the internal base of the

* This has actually occurred; one species of *Heterocyathus* being removed to *Stephanoseris* because of the granules of the opposite septa uniting.

corallite and should be placed between certain septa and the columella, or the anal space, when this last is deficient; they may adhere to the septa, but in either case the ornamentation and general arrangement of the sclerenchyma of the pali differ from those of the septa; a row of pali infers an extra row of tentacles. But the term pali is given to prominent dentations of the inner margins of septa, or to the inner margins when their dentation differs from the rest of the septa as in *Phyllangia*, for instance. This is not correct; such structures may be called papillose, but this will not permit of the corallites being classified as having pali." In another place, the same author says, (p. 432) :—"The importance of deciding the true character of the structures is great, for whilst the septal spine may be of specific importance, the presence of the pali as independent structures is generic, for it involves the presence of other tissues; such for instance, as an extra crown of soft tentacles. Every one who has seen many of the small sessile corals usually called *Astrangia*, *Phyllangia* and *Ulangia*, amongst the *Astrangiaceæ* must have felt this difficulty. In some, the spinose character of the false palus is evident, but in other species an arbitrary custom appears to have decided that such and such are not septal structures but pali."

It seems to me that there is almost the same difficulty in a different way as to the columella, as I have before remarked, and so also as to the costæ which are sometimes clearly only extra mural septa, and sometimes quite distinct from other tissues. A good many of the difficulties might be met for the present by most exactly defining the terms and introducing a few new ones.

I propose to follow up this paper by another on the corals of the Chevert Expedition, which will principally include tropical forms.

The Class Polyps, to which Corals belong, comprises radiated aquatic animals which have only one orifice which is surrounded with tentacles, the body being hollowed out, and forming open and intercommunicating cavities in which are contained the reproductive organs.

The class is divided into sub-classes, namely—1. CNIDARIA,*

* From *κνιδη*, applied by Aristotle to the Jelly Fish, which he also called *αλφη*.

animals with tubular tentacles disposed in a crown, and communicating with the visceral chamber; and 2. PODACTINIA.

The CNIDARIA are divided into two orders—1. ALCYONARIA, 2. ZOANTHARIA, which latter have simple tentacles or ramifying irregularly and increasing with age.

The Zoantharia are again divided into three sub-orders, viz.:—1. ACTINIA, always soft in every part; 2. ANTIPATHARIA, with a coriaceous axis and a tissue full of spiculæ; 3. MADREPORARIA, with a stony calcareous axis.

The *Madreporaria* are known by the stellate structure of their polypodom, which arises from the septa or divisions of the visceral chamber. We distinguish in each chamber—1. The *septa;* 2. The *calice* or cup-like depression of the summit; 3. The *columella* or central mass or column independant of the septa and springing from the base; 4. The *wall* or partition which bounds the whole chamber; 5. The *costa* or ribs outside the wall which often seem identical with the septa, but generally are quite distinct from them. *Madreporaria* are divided into five sections—1. *Aporosa*, or those on which the tissue or sclerenchyma is compact; 2. *M. Perforata:* sclerenchyma perforated; 3. *M. Tubulata:* tubular; 4th. *M. Tabulata:* visceral cavity subdivided by stages or floors, and the septa rudimentary or hexameral; 5. *M. rugosa:* sclerenchyma tabulated, but the septa well developed and tetrameral.

By far the greater portion of our stony corals belong to the first section of *Madreporaria Aporosa*, indeed they include the larger portion of the whole class. It should be borne in mind therefore that in this section the visceral chamber is open or free, being only transversely subdivided by irregular projections. The septal apparatus is well developed, and the sclerenchyma or stony matter of the wall, &c., is compact.

This section includes eight principal groups—1. *Turbinolidæ;* 2. *Dasmidæ* (fossil); 3. *Oculinaceæ;* 4. *Stylophorinæ;* 5. *Echinoporinæ:* 6. *Astreidæ;* 7. *Merulinaceæ* (one genus only); 8. *Fungidæ.*

The first family concerns us the most. It is composed entirely of solitary corals. The wall is quite imperforate and not covered by any outer sheath *(epitheca)*, though sometimes there is a sort of basilar sheath. The septa are free laminæ with entire edges, and often granular, which granules never unite from side to side to form what are termed *synapticulæ;* there is no inner sheath *(endotheca)* so that the chambers are open for all their extent to the base. In many species the columella is absent or the septa unite in the middle *(Conocyathus zelandiæ* of Australia), but sometimes it exists, and between it and the septa there are certain laminæ arising from the base or the inferior portion of the septa. These are called *pali*. In the *Turbinolidæ* the pali have an existence independant of the cycles though they are in the line of their prolongation. They are generally absent from the septa of the last cycle.

This peculiarity gives ground for subdividing the large family into two subfamilies—1. *Caryophyllinæ*, with one or many circles of pali; 2. *Turbinolinæ*, from which pali are completely absent. The first subfamily is again divided into—1. *Caryophyllaceæ:* one circle or crown of pali; 2. *Trochocyathaceæ*: many circles or crowns of pali.

Genus CARYOPHYLLIA, *Lamarck*, 1801.

Corallum attached and simple, with one row of pali; wall bare, more or less raised; columella crisped; pali broad; costæ simple.

Professor Duncan regarded a fossil coral from Muddy Creek as belonging to this genus, but the specimens sent to him were imperfect. A large series of well-preserved fossils has induced me to refer this species to the genus *Deltocyathus*. We have no true Caryophyllia known in the Australian seas, though the genus is well represented in the Atlantic and British seas. We have none fossil though simple pedicellate corals are also well represented, but they are intimately related to the existing forms, and more in alliance with extinct European fossils than with what survives in Northern seas.

Genus CONOCYATHUS, *D'Orbigny*, 1849.

Coral simple, trochoid, straight, without trace of adherence; costæ sublamellar; septa exsert and laterally granular; *no columella;* pali penultimate and well developed.

This genus was known by one species hitherto, described from the Miocene of Mayence, but said to be identical with one very common at Port Jackson (Sow and Pigs reef, about 16 fathoms.) I do not believe that the species are identical, but the diagnosis of M. Milne Edwards is so very meagre that I give the specific name with my notes for other naturalists to follow up. "CONOCYATHUS SULCATUS, *d'Orbig. in M. Ed. & H., Poly. foss. des. terr. palæoz., p.* 20, 1851, also *d'Orb. Prod. de Paleont. tom.* 3, *p.* 145, 1852. *M. Ed.*, remarks that this species resembles *Turbinolia dispar* exteriorly, except that the costæ are a little less thick and fewer; three complete cycles; septa unequal, somewhat thick; six broad and thick pali, in front of secondaries." *Hist. Nat. des. Cor., Vol.* 2, *p.* 25. My diagnosis is:—Corallum of regular conical form, not much elongated; base less than half the width of the calice; transverse section perfectly circular throughout; costæ numerous, forming four cycles closely set, equal, somewhat projecting, the secondaries arising from the base and being with the first thicker at their origin, becoming sharp and thin higher up, tertiaries arising a short distance from the base, but those of the fourth order at about a third and the fifth in the upper half of the corallum; intercostal furrows about width of costæ, not very deep, with a regular single series of rather distant pores (?); scarcely any perceptible calicular fossa; columella undistinguishable as the septa all unite in the centre, but there are two small lobes visible in a depression in the centre of the pali; septa in six systems of three cycles, and there are none to correspond with the fourth cycle of costæ. The secondaries are thinner until united with their pali, which rise in high falcate crests round the centre, being much more exsert than any of the septa; the primaries are more exsert and larger in size than the secondaries, and the tertiaries bend regularly round and unite with the pali, being thickened at the point of junction; pali

before the secondary septa only, and some almost styliform and more exsert than others; they are with the septa only faintly granular occasionally and never spinously granular *(echinulé)* as stated in the case of *O. sulcatus*.

Seven specimens of this very interesting coral were dredged by Mr. Macleay, off Port Stephens, at 71 fathoms. The average size of all the specimens, $6\frac{1}{2}$ millim., with a diam. at the calice of $3\frac{1}{2}$.* It is in all respects a *Turbinolia* with pali, instead of a columella. It most resembles *T. Fredericiana*, Ed. and H. in the form and in the costæ being a cycle in advance of the septa, but the junction of the tertiary with the secondaries is not by sloping towards them, but by bending round and thickening. It is, as already observed, common at Port Jackson.

CONOCYATHUS CYCLOCOSTATUS, *nobis*. See *Proc. Roy. Soc., N. S.W.*, 1877.

CONOCYATHUS FENESTRATUS, *nobis, loc. cit.*

CONOCYATHUS COMPRESSUS. N. S. Plate V, fig. 1, a & 6.

Corallum cuneiform, very much compressed at the base, which is sometimes pointed. No trace of adhesion. Calice *narrowly elliptical* and shallow; septa in six systems of four cycles, very slightly exsert, rounded and almost grooved and serrated at the edges; all the orders quite straight, primaries and secondaries equal; pali equal, tall, thin, rounded and before all the orders except the last, and form a compact mass in the centre with the septa; costæ distinct to the base and in cycles corresponding to the septa; primaries and secondaries distinct to the base, tertiaries arising a very short distance above them, fourth and fifth orders a third of the height from the base; all smooth or very faintly granular. Intercostal spaces shallow, not apparently pitted. Alt. 8-10. Maj. axis $6\frac{1}{2}$-7, min. axis $3\frac{1}{3}$-4. mil. Off Port Stephen's, 71 fathoms. W. S. Macleay.

* I have since met specimens double the size given. Professor Duncan has named the New Zealand specimens *C. Zealandiæ*, and I have no doubt they are identical with ours.

Two specimens of this very interesting coral are in the Macleayan Museum. It differs very much in the form of its pali and in general shape from all our other species, and is more like *Deltocyathus viola*. But the pali do not unite to one another, though they are united to the septa, being little more than lobes.

TROCHOCYATHACEÆ.—Pali in many circles round the columella.

Genus TROCHOCYATHUS, *M. Ed. and H.*, 1848.

Corallum simple, pedunculate or subpedicellate, or with only faint traces of adherence; columella well developed, composed of bundles or series of prismatic or twisted processes; pali well developed, entire, free to a great extent, unequal according to the cycles to which they belong, and present before all the cycles except the last; septa exsert, broad, and laterally striate; wall bare, or with only a rudimentary epitheca.

All the known species are fossils extending from the Lias to the Pleistocene, but most numerous in the Miocene. There are two fossil species in New Zealand, figured, but not described in the *Quart. Jour. Geol. Soc., Vol.* 6, 1850, *p.* 331, *pl.* 28, *fig.* 18 *and* 19. Milne Edwards doubts if they can be arranged under the genus (see *Nat. Hist. des. Cor., Vol.* 2, *p.* 46). They are both from Pleistocene beds in Onekakara, New Zealand, and are named *Trochocyathus hexagonalis*, and *T. Mantelli, Ed. & H. ut supra.*

2.—TROCHOCYATHUS MERIDIONALIS. *Duncan.*

The corallum is short and hemispherical in shape, marked externally by subequal costæ, and a depression at the base, small, and circular in outline. The costæ are separated by distinct intercostal spaces, are very prominent at the calicular margin, and faintly marked with wavy swellings, and their external surface near the base has a row of rounded granules. The primary and secondary are slightly larger than the tertiary, and the higher orders are smaller than the latter. The calice is circular in outline, and shallow. The septa are distinct, unequal, distant and smaller than the costæ. They are broad externally, and exsert, but they soon become narrow, granular laterally, and depressed below the circular margin. There are four cycles in six systems:—

the primary are the largest, and are connected with the largest and most prominent costæ; the secondary are smaller; and the smallest septa, *i. e.*, those of the fourth and fifth orders, only unite with the tertiary far inwards. The granules are large, and appear to increase in size towards the columella. There are pali before all the septa except those of the last cycle; and the upper edges of the septa pass upwards and inwards to reach the pali, which are small, long and granular. The tertiary pali are more external than the others; and all are united laterally by a spongy tissue, so as to form a ring higher than the septa in the body of the calice. The ring occupies much space, forms the outside of the columella; and within the ring is a deep fossula, at the bottom of which the hard and flat centre of the columella is seen, Height of the corallum, $\frac{3}{10}$ inch; breadth of the calice, $\frac{3}{10}$ inch. Locality, No. 7, $2\frac{1}{4}$ miles east of the river Gellibrand.

TROCHOCYATHUS VICTORIÆ, *Duncan*.

The following is Prof. Duncan's diagnosis of the fossil form. Corallum subturbinate, compressed base elongate and nearly in shape of a ridge; calice elliptical, shallow; costæ slightly waved. distinct, subequal, prominent, rounded, ornamented on free surface by circular disks with a central boss-like swelling or by moniliform swellings, covered with a pellucid structure, which, when worn, represents the outside of the disk; slightly granular laterally; calicular margin broad, wall stout, septa smaller than costæ, rather exsert, soon becoming thin, granular laterally, rather wavy, long, wide apart, unequal, higher orders long; turned towards the tertiary near the columella, four cycles, six systems; pali slightly broader than septal ends, long and granular, before all septa except 4th and 5th orders; columella essential, spongy, small. Alt. $\frac{4}{10}$, calice long. $\frac{1}{3}\frac{2}{0}$ lat. $\frac{8}{3}\frac{}{0}$ of an inch. Loc. Strata $2\frac{1}{4}$ miles east of river Gellibrand. A taller variety with base filled up with sclerenchyma, longer costæ, and more distinct ornamentation. Worn fossils present very distinct costæ and an uneven free surface, occuring in a dark shale in numbers together.

This species occurs living between Port Jackson and Port Stephen's of double the size mentioned here. The costæ are in cycles corresponding to the septa. It is very rare.

There are slight differences between Prof. Duncan's description and the living form. The ornamentation of the costæ is subspinous, and the columella is a linear series of very granular papillæ which send off processes to the septa. The pali are in reality only deep lobes of the septa. This is a case where, according to Prof. Duncan these processes should not be regarded as pali at all, yet I have very little doubt that these single lobes perform the offices of these organs and that there is an extra crown of tentacles on the animal. Some of the primary septa send forth transverse spinous processes at the origin of the pali.

New Genus DUNOCYATHUS.

Corallum simple, parasitic; base and side entirely immersed in calcareous foreign body; one row of pali.

This genus is erected for the reception of immersed and parasitic corals of the Caryophyllian group of simple Turbinolidæ; consequently it possess pali, but as it is immersed nothing can be said about the costæ, base, &c. The name was taken from Δύνω, immersed or sunk. Only one species has as yet been found, but the necessity of a separate genus for its reception is quite obvious, The appearance of the entire pali and columella would place it close to Paracyathus.

DUNOCYATHUS PARASITICUS, N. S., Pl. 5, Fig. 4, a & b.

Corallum entirely immersed in the base of *Lunulites cancellata*, Busk, the wall being slightly curved outwards. Calice circular and shallow; septa in six systems of three cycles; primaries and secondaries of equal size, very slightly salient but sloping away from the sides; the edges denticulate or set with irregular lobes and points, and both surfaces set with very coarse projecting granules. Columella with a papillary summit united below to the pali which are indistinct, confluent and sending forth horizontal traverses to the septa so as to form irregular horizontal laminæ from which the columella rises. Diam. 2 millim. Off Port Jackson, 45 fathoms. J. Brazier.

This singular coral is not unlike *Paracyathus Thulensis*, Gosse, except that it has only three cycles. Set in the base of a *Lunulites* it makes the conical polyzoary not unlike a complete *Turbinolian*, but the calice does not fill up the whole of the base, and is not usually symetrically placed.

Genus DELTOCYATHUS. *M. Edw. & H.*, 1848.

Corallum free and without trace of adherence, calice shallow, columella pluripartite; pali entire, highly developed, principally those of the penultimate cycle which is directed towards the antipenultimate so as to form chevrons or deltas. There are none before the last cycles. Costæ granular and distinct to the base.

DELTOCYATHUS ITALICUS. *M. Edw. & H.*

Corallum a short cone; calice circular; septa very slightly exsert, thickened exteriorly, of four complete cycles and six systems; columella fascicular; pali thick and very unequal; costæ in cycles regular and granular. This occurs fossil in the Italian Miocene, and still exists in the Carribean Sea. It is not uncommon in the Geelong aud Cape Otway beds, but has not been found at the Muddy Creek, Mount Gambier, or in Tasmania.

DELTOCYATHUS VIOLA. *Woods & Duncan.*

This species was long mistaken for a *Caryophyllia*, because when worn the deltoid pali became eroded, looking like a single circle before the tertiaries. I have described and figured a perfect specimen in the *Proc. Roy. Society*, N. S. Wales, 1877.

DELTOCYATHUS ROTÆFORMIS. N. S., Pl. 5, Fig. 2, a & b

Corallum circular, depressed, with perfectly flat base which is coarsely granular and so thin that it is frequently worn through and shows the radiating septa; calice circular in outline, fossa very slightly sunk; septa in six systems of three cycles; primary and secondary equal but the former much more exsert and projecting high above the calice; tertiary short and without pali. All granular; pali united to the inner edges of the first and second cycles and throwing out thick transverse processes at their junction. Columella papillary; granules of the base vermicular

costæ springing from the edge of the base and quite distinct, straight, flat, broad or circular and seen from above look like pillars, very finely granular equalling the interstices in thickness and projecting above the edge of the calice forming protuberances which *alternate with the costæ*, being equal in number with them. The wall is quite distinct from both septa and costæ. Diam. 4-6. Alt. 3-4½ mil.

Six specimens of this remarkable species were dredeged up at 71 fathoms off Port Stephen's by Mr. Macleay. It departs very much from all our other species in its shape and in the wall, the pali and in the peculiar costæ which alternate with the septa.

Sub Family TURBINOLINÆ. Pali entirely absent.

Genus SPHENOTROCHUS, *M. Edw. & H.*, 1848.

Corallum simple, free, and without trace of adherence, straight and cuneiform; calice elliptic; columella lamellar, extending horizontally along the greater axis of the cup; septa few and exsert; costæ broad, either smooth, crisped or papillary.

SPHENOTROCHUS VARIOLARIS, *Nobis.*

This species has been fully described and figured by me as a fossil in the *Proceedings Roy. Soc.*, N. S. Wales, 1877. It exists on the South East coast, three specimens having been dredged up by Mr. Macleay, off Port Stephens, at 71 fathoms, and Mr. Brazier has obtained others.

SPHENOTROCHUS AUSTRALIS, *Duncan.*

This name was given by me to a specimen sent to England in 1864. It is described and figured by Professor Duncan in the *Jour. Geological Society* for 1870, p. 297. It is rather a common fossil in the Muddy Creek beds. It is not known to be living.

Corallum compressed, angular and deeply excavated inferiorly, long axis double the length of minor; costæ broad, wavy, well-defined and descending to ends of lateral processes; calice not shallow, elliptical; columella long, lamellar; primary and secondary septa joined to columella, not exsert, smooth; all septa

well developed in three cycles and six systems, not corresponding to the costæ. In some specimens there are a few septa of a fourth cycle. Alt. 6 to 10, long. 3 to 5, lat. $1\frac{1}{2}$ to 2 mil.

SPHENOTROCHUS EXCAVATUS, N. S., Pl. 4, Fig. 1, a, b, c.

Corallum tall, broadly cuneiform, only slightly narrower and more compressed at the base; calice elliptical, the axis being as 4 to 3; ends of major axis somewhat depressed below minor; septa moderately exsert, smooth, except a granular exterior margin, sending forth many long processes into the fossa which sometimes curve upwards and at the base unite with the columella; in six systems of three cycles, primaries and secondaries nearly equal, tertiaries almost rudimentary, but very thick and becoming stouter outside the wall; fossa very deep and open; columella a narrow short lamellar plate projecting very little above the base of the calice, scarcely extending horizontally one-sixth of the length of the major axis; costæ in systems corresponding to the septa, the primaries and secondaries suddenly thickening and becoming very coarsely granular and rugged to the base, especially laterally, where they almost assume the form of crests or ridges; tertiaries continuous and simple, desisting at about one-fourth from the base; all very granular and almost crested. Port Jackson, rare. J. Brazier. Alt. 10, major axis 6, minor $4\frac{1}{2}$, at base 5 and $2\frac{1}{2}$.

Genus SMILOTROCHUS, *M. Edw. & H.*, 1851.

Corallum simple, straight, cuneiform, free and without trace of adherence; no columella; septa finely granular, a little exsert; wall bare, showing simple distinct costæ. Further on I have given reasons why this fossil should be considered the type of a new genus.

SMILOTROCHUS VACUUS, *nobis.*

This is a fossil species from the Muddy Creek which has been described by me and figured in the *Proceedings of the Roy. Soc.*, N. S. W., for 1877. All the known species have the septa united or confluent at their inner edge, but this species has a deep well in place of the columella.

Genus CERATOTROCHUS, *M. Edw. & H.*, 1848.

Corallum simple, subpedicellate, in the adult state columella highly developed and fascicular; septa broad and exsert; wall bare, with costæ distinct to the base, the principal of which are variously ornamented.

CERATOTROCHUS FENESTRATUS.

Is a species described by me in the *Roy. Soc. Proc.*, N. S. W., loc. cit., but which now I have considerable doubts whether it should not be regarded as a *Dasmia*. I shall return to the subject shortly in a future paper on our fossil corals.

New Genus CRISPATOTROCHUS.

Corallum broadly adherent; septa small; fossa broad and deep; columella highly developed, crispate; costæ simple, distinct, granular.

Differs from *Ceratotrochus* in being broadly adherent with very simple costæ, broad and deep fossa and small septa.

CRISPATOTROCHUS INORNATUS, N. S. Pl. 6, Fig. 2, a, b, c.

Corallum turbinate, constricted above the base, which is two-thirds the width of calice; transverse section subcircular, compressed laterally; costæ corresponding to septa, broad, flat, separated by a finely depressed line, but becoming more distinct and separate at the edge of calice with many not very prominent granules; calice broadly elliptical; axis as 10 to 8; septa in six systems, four cycles, little salient, thick externally, granular and slightly flexuous internally, those of the 3rd order especially; primaries and secondaries equal, scarcely larger than the tertiaries, while the fourth and fifth orders differ a little in size; all the orders somewhat exsert, but the 1st and 2nd especially; fossa wide and deep; columella very large, crispate, of spongy, twisted tissue, or broad rounded lobes more like the centre of a cauliflower. Alt. 12, maj. axis 10, min. 8, diam. of constriction 5, of base 7, mil.

One specimen only in the Macleayan Museum, dredged at 80 fathoms, off Port Stephens.

This coral is distinguished by the small number of cycles (in which respect it resembles *Paracyathus crassus*, Ed. and H.) by the depth of the calice, and the septa being so slightly salient, which makes the columella a very prominent feature. It is more like the fossil species than any at present living. In this specimen one half the cup is covered and obliterated by a silvery *Millepore* (?)

Second Division FLABELLACEÆ.

Wall entirely covered by a pellicular epitheca.

Genus FLABELLUM, *Lesson*, 1831.

Corallum simple, straight, compressed; calicular fossa narrow and deep; columella represented by a few spiniform processes on the internal edge of the septa; the latter numerous and subequal, so that the cycles and systems are very difficult to distinguish; they belong to six primitive systems; they are not exsert, and have well-marked radiated series of granules, the wall often furnished with crests or spines. M. Edwards adds that they never have radiciform processes.

FLABELLUM SPINOSUM, *M. Ed. & H.*

Corallum much compressed, deltoid, of somewhat less than a right angle, and bearing on each edge, about the middle, a long, stout spine which is projected outward and downward; the ends of the greater axis of the calice depressed one-third of the height; septa thin, in five cycles, the three first of which are equal and the fifth rudimentary. Alt. 13, major axis $16\frac{1}{2}$, minor 7 mil.

Princess Charlotte's Bay. It has also been found in the China Seas. Said to occur also at Moreton Bay.

FLABELLUM AFFINE, *M. Edw. & H.*

Corallum adherent in its young state but becoming subsequently detached, and having a large basilar scar; very much compressed, the lateral edges being simple, slightly concave, and forming an angle of about 65°; lateral outline of the calice very convex, so that the slightly angular edges of the greater axis are

depressed about half the height; septa thin, narrow, with rather large granulations in six cycles, and the first four being equal, give them the appearance of being in 48 systems of three cycles.

Rather numerous on the N. E. coast, within the tropics, and in the Gulf of Carpentaria, at depths varying from 10 to 30 fathoms. Moreton Bay (?)

FLABELLUM CANDEANUM, *M. Edw. & H.*

Corallum moderately compressed, the lateral costæ forming an angle of about 45°, each furnished with three strong spines directed outward and downward, one near the base, the other near the centre, and the third at the edge of the calice; the ends of greater axis in a pointed arch, and very little below the plane of the short axis; columella fossa deep; septa in five cycles, but the fifth not seen in one half of the middle systems; first and second orders equal.

In the Chinese Seas, and found fossil in Australia, in the Muddy Creek, Geelong and Murray beds.

FLABELLUM DISTINCTUM, *M. Edw. & H.*

Corallum subpedicellate, but becoming free in the adult state, having scarcely any scar as the pedicel is finely pointed, where it is much compressed, lateral costæ forming rather more than a right angle; calice somewhat compressed, and the edges rising from the ends of the greater axis so as to make almost a half circle; septa in six cycles, the three first equal, giving the appearance of 24 systems composed of seven septa each. Alt. 25, major axis 33, minor 18 mil.

Japan and a Miocene fossil in Australia (Muddy Creek and Geelong.) It has been dredged at 70 fathoms on the E. coast, Cape Three Points. Dr. Rayner.

FLABELLUM RUBRUM, *Quoy & Gaimard.*

Corallum always attached, much compressed; costæ hardly distinct under the folds of the epitheca; calice deep, the summits of the lesser axis a little above the major axis, and slightly re-entering; columella (?) formed by somewhat thick and

irregular processes; septa very thin and broad in five cycles, which by the irregularity of the three first orders have the appearance of 24 systems.

New Zealand is the habitat given by Messrs. Q. and G., at 24 fathoms, but I have seen specimens stated to have been found in Australia, but as they were in collections with N. Zealand shells I am doubtful of the habitat.

FLABELLUM GAMBIERENSE, *Duncan, Quart. Jour. Geol. Soc.*, 1870, *p.* 299.

Found as a fossil at Muddy Creek; a tall, narrow, pedicellate form, curved, with long tapering pedicel, concave sides, and often small spines nearer the calice than the pedicel; compressed epitheca, strong, in arched finely linear folds; calice oval-elliptical; septa in six systems of four cycles, primary and secondary equal, stout, granular, enlarged internally to form by their ends a rudimentary parietal columella; other septa smaller and granular; the septa are continuous with depressions between the intercostal spaces which are marked with chevron lines on the epitheca, and are in a certain sense costæ.

Height of coral about 16 mil; diam. about half; min. axis only slightly different. Fossil at Cape Otway.

FLABELLUM VICTORIÆ, *Duncan*, loc. cit.

A small stout almost circular species with large basilar scar and two spinous processes at each side of the base like radiciform appendages. Muddy Creek and Geelong, fossil. Coral tall, compressed below, sides slightly concave, epitheca with faint markings; angle of sides about 20°; calice elliptical, end slightly depressed; fossa shallow except at the centre where it is deep, narrow and long; wall thin; septæ delicate, not exsert, very little rounded; granules large, unequal, and in series in six system of four cycles; primary and secondary equal; costæ faint, continuous with the septæ.

FLABELLUM DUNCANI, *Nobis. Proc. Roy. Soc., Tasmania*, 1876, *p.* 115.

FLABELLUM IRREGULARE, N. S., Pl. 4, Fig. 2.

Corallum long, narrow, a compressed cone, attached to a shell, but the basilar attachment about half the major axis; the summit of the calice a narrow oval, the major axis being only very slightly lower than the minor; calice deep, with no trace of any columella; septa unequal according to the orders, not exsert, thickly covered with small granules, in six systems of five cycles, but incomplete at the two central systems; costæ quite hidden by the dense epitheca which rises into high crests near the summit, or is marked by deep furrows on the lower part; lateral crests very irregularly furnished with long irregular spines which do not correspond on the opposite sides. Thus there is one at one side of the base, and a long curved one half way above it, but there is only a little process at the other side, and above there is another and somewhat longer. Two small *Myochama* are attached to the sides; the septal edges do not appear to be undulating, but they have small projecting processes which, however, do not seem to unite at any part of the fossa. Alt. 25, maj. axis 18, min. $9\frac{1}{2}$, base 11, min. ax. 5 mil. Off Port Stephens, 70 fathoms.

A single specimen of this curious coral is in the Macleayan Museum. Its long narrow shape and the very irregular spines sufficiently distinguish it. No doubt some of the irregularity is caused by the adherent mollusca, but one at least must have taken its place when the coral was nearly its present size as it is high up on the cup. I have seen some specimens of what I consider is *F. pavoninum, Lam.*, quite as narrow and long as this species, so that mere shape could not be a sufficient distinction. But the generally neat appearance of most *Flabella* is in very strong contrast to the irregular and sordid aspect, and yellowish white color of the one described. We are not as yet sufficiently acquainted with the laws regulating the growth of spines or their use to be able to determine their specific value.

KOILOTROCHUS, GEN. NOV.

Corallum simple, free, without trace of adherence; no epitheca; costæ simple, distinct and prominent; columella rudimentary confined to a few papillary projections at the base of the deep and wide calicular fossa; septa four, slightly exsert.

This genus is allied to *Ceratotrochus* and *Platytrochus*. It differs from the former in its rudimentary columella and simple small septa; from the latter in its simple costæ and septa, and from both in the extraordinary depth and width of the calicular fossa, whence the name from *Κοιλὰς*, a cavity.

There is a fossil species from Muddy Creek named by me in the *Proc. Roy. Soc.*, *p.* 1877, *Smilotrochus vacuus*, which I think should be referred to this genus.

Genus PLACOTROCHUS, *Edw. & H.*, 1848.

Corallum simple, straight, compressed, pedicellate with a basilar scar; *columella lamellar* with a horizontal and crenulate edge; septa exsert.

PLACOTROCHUS CANDEANUS, *D'Orbigny.*

Corallum elongate, with almost parallel lateral costæ, with rudiments of crests on the inferior half and close to the broad basilar scar two small compressed spines; calice regularly elliptical with almost horizontal edges; fossa not very deep; columella very extended; septa thin with frilled edges and very granular, in four cycles; first and second equal, third differing slightly. N.E. Australia, Princess Charlotte Bay, also found in the China seas. I believe that it extends outside the tropics.

PLACOTROCHUS ELONGATUS, *Duncan, Quart. Jour. Geol. Soc.*, 1870, *p.* 300, *pl.* 20, *fig.* 3.

The following are the notes of Professor Duncan on this species:—"The coral is very tall in relation to its breadth, straight, greatly compressed, especially inferiorly, finely pedicellate and cuneiform. The sides are rounded and slightly swollen out here and there, and form an angle of about 15 to 20, or are sharp and slightly spined, but the spines do not project much beyond the epitheca (in old specimens); the anterior and posterior surfaces are flat; the calice is small elliptical and rounded at the sides; it has slightly exsert septa, which are rounded, thin, delicate, and unequal, and in six systems of four cycles; the fossa is central,

shallow, and long; the columella projects from the bottom of it as a distinct straight lamella, stout in the body of the coral and thinner at its free edge, is essential and marked by distinct papillæ at the junction of the septa; septa delicate, highly granular, and often wavy at the inner margin; minor axis of calice higher than the longer; costæ faintly marked, or distant and linear; epitheca in strong curved folds or in festoons between the costæ. Height from 20 to 25, length of calice 8 to 10, width 6 to 8 millim. Fossil only; common at Muddy Creek. Found at Mount Gambier, but as a cast only. Very common and large at Table Cape, Tasmania.

PLACOTROCHUS DELTOIDEUS, *Duncan.*

Coral deltoid, finely pedicellate, compressed; calice wide and long; costæ somewhat distinct; epitheca strong in arched ridges; columella long, sharp, thin, and faintly papillate; septa not exsert, feebly arched, delicate, granular, with flexuous inner margin, in six systems of five incomplete cycles; angle of sides about 60°. Alt. varying from 30 to 40 mil.; maj. axis little less than height, and minor about one-third. Very common as a fossil at Table Cape, Tasmania; less common at Muddy Creek, and River Gellibrand, Victoria, where it is also smaller.

PLACOTROCHUS ELEGANS. *Nobis. See Proc. Roy. Soc. N. S. W.*, 1877.

A very small species with coronate edge.

Family OCULINIDÆ, *Edw. & H.*, 1849.

Corallum compound, dendroid, growing by lateral buds, cœnenchyma highly developed and very compact, on which the costæ are represented by striæ or granulations; visceral chamber with few traverses but gradually filling up from below; septa few, well developed, imperforate, and without synapticula.

This family for the most part includes living species, but there are a few tertiary and secondary forms, though none older than the Oolite. There are very few Australian species.

Genus AMPHIHELIA, *Edw. & H.*, 1849.

Septa few, unequal; no pali; septal edges entire, slightly exsert; corallum dendroid; corallites alternate; columella rudimentary; costæ visible at the edge of the calice only.

AMPHIHELIA VENUSTA, *Edw. & H.*

Branches tending to develope on the same vertical plane; calices alternate: short costal grooves in the neighbourhood of the calices, which are deep and without a columella; septa in three cycles, a little exsert, thickened exteriorly, a little bent, unequal according to the orders, but sometimes in the same order; tertiaries rudimentary. Width of calices 3 millim.

Not uncommon in many places on the east coast at moderate depths, from 10 fathoms.

AMPHIHELIA INCRUSTANS, *Duncan, Quart. Jour. Geol. Soc.*, 1870.

Corallum flat, encrusting; calices arising like crateriform processes; surface irregular, with undulating, subequal, bifurcating costæ passing more or less obliquely to the outside of the calice; calices very minute, crateriform; margins sharp; fossa shallow; septa in six systems of three cycles with the rudiments of a fourth, not exsert, and smaller than costæ; columella small and projecting.

Professor Duncan proposes to place the genus *Amphihelia* amongst the Turbinolidæ, because the calices do not fill up from below, and the visceral chamber is quite free. It remains to be seen if this arrangement will be accepted. With so highly developed a cœnenchyma, and a dendroid growth, the genus would certainly be an anomalous one amongst the Turbinolidæ, while its connexion with other Oculinidæ seems in all but the absence of endotheca to be most natural. I have, however, in my possession a fossil from Aldinga, in which some of the calices on the same branch fill up from below, and some are quite empty to the base of the fossa. This fossil will be figured and described shortly.

Genus STYLASTER, *Gray*, 1831.

Corallum dendroid, alternately but somewhat irregularly budding; cœnenchyma highly developed with occasional little points or vesicular tubercles; columella styliform, placed deeply in the visceral chamber; septa equal, not projecting much, imperfectly developed and few.

STYLASTER GRACILIS, *Edw. & H.*

Corallum fan-shaped; branches fitted somewhat closely, packed but not coalescent, of a rose orange, with the exceptions of the last ramifications, which are white; the main trunk has a smooth surface; the branches have microscopic striæ, and are all covered with subspinous tubercles; the calices in an opposite vertical series on both sides of the branches in general somewhat projecting; 12 to 13 rather thin septa, which are very exsert in the terminal calices. None of them exceed $\frac{2}{3}$ millim. in diameter.

Not common on the east coast, north of Botany Bay.

STYLASTER SANGUINEUS, *Valenciennes.*

Corallum subflabelliform, the principal branches almost white, the thinnest of an intense blood red; vesicular tubercles gathered in small groups presenting radiated costæ, and separated by little pits; calices the same as the last, but some scattered on the surface of the branches, somewhat projecting. $\frac{2}{3}$ millim. in diameter and with 12 septa.

Rather uncommon on the east coast.

STYLASTER GRANULOSUS, *Edw. & H.*

Branches irregular, of a rose purple, the surface covered with very distinct papilliform granules; tubercles small, few, radiately costulate, slightly projecting; calices on the surface of the branches scattered, circular or oblong, with indistinct margins. 1 millim. wide.

The habitat of this species is given as Australia, but I don't remember to have seen anything like it, except an imperfect fragment which came from Port Stephens.

Fam. ASTREIDÆ. *Dana*, 1846.

Corallum compound, tissue imperforate or almost so, interseptal chambers divided by traverses which are disconnected with those of other chambers so as not to form floors; this endotheca gives the lower part of the visceral chamber a cellular structure which, however, is never developed into a compact tissue; septa more or less imperfect on the outer edge, but never perforate throughout; no cœnenchyma; the walls of the calices being united to one another or confluent by means of the costæ, which have also intercostal traverses. Sometimes there is a false cœnenchyma (peritheca) formed by traverses between the walls of contiguous calices.

Some little connection exists between this family and Turbinolidæ in such genera a *Cœlosmilia*, *Lophosmilia*, and *Conosmilia*, in which the endotheca is rudimentary; but all the family have *transverse interseptal subdivisions*. It is divided into two subfamilies, viz:—*Eusmilinæ* or *Astreæ* with entire and sharp edges to the septa, and *Astræinæ* with septal edges divided or spinous.

These again are subdivided into—1st, *Trochosmiliaceæ*, or those which have the corallum simple; 2nd, *Euphylliaceæ*, or those which are compound, but multiplying by fissiparity; 3rd, *Stylinaceæ*, compound and multiplying by budding.

Sub. family EUSMILINÆ. *First Div.* TROCHOSMILIACEÆ.

Genus CONSOMILIA. *Duncan*, 1870.

Corallum simple, pedicellate, conical; columella of one or more twisted laminæ which extend from the base upwards; endotheca scantily developed; septa with apparently simple margins and variable with regard to the number of primaries.

Of these corals Prof. Duncan says that they are the most interesting our tertiary beds possess, having a curious union of abnormal peculiarities. "A simple coral with pellicular epitheca, having a beautiful herring-bone ornamentation, with an essential twisted serialaire columella with endothecal dissepiments and with plain septa which have the hexameral arrangement in some,

and the octameral in others, is a form containing the elements of several classificatory systems." *Dunc. in Quart. Jour. Geol. Soc.*, 1876, p. 309.

I have already given in the *Proc. Roy. Soc.* of N. S. W., for 1877, a synopsis of the genus which includes only fossil species. They are *C. elegans*, *C. anomala*, *C. striatula*, *C. lituolus*, all described by Duncan as above, and *C. bicyla*, *nobis. loc. cit.*

Second Div. EUPHYLLIACEÆ.

Genus EUPHYLLIA. *Dana*, 1846. (*pars*).

Corallum tufted or subfoliaceous, the base developing very little with age; the corallites in multiplying become free above, or remain united in a more or less lengthy series, but then this series is always free in the costæ and the calicinal centres which are always distinct; there is no trace of a columella; septa very numerous, excessively thin, bare, almost smooth below, and costulate in the vicinity of the calice; endothecal traverses abundant though the septal chambers are somewhat deep.

EUPHYLLIA GLABRESCENS. *Chamisso.*

This is strictly a tropical species which Prof. Duncan gives in his list as Australian. It is not, however, known in this country. Milne Edwards describes it as coming from Raddak Island, Australia. There is no such island off Australia, but probably the island of that name which is one of Marshall's group, in Polynesia, is meant.

Second sub-family, ASTREINÆ.

Turning now to the second sub-family of ASTREIDÆ, that is, of those which have septa deeply lobed or furnished with spines, we find them divided into two sections. 1, *Lithophylliaceæ* or *Astreæ* which are simple corals or increasing by fissiparity the corallites disposed in crested tufts or in linear more or less confluent series. 2, *Astræaceæ*, which are massive compound corals multiplying by budding and never serial. There is an inter-

mediate sub-division called *Faviaceæ*, where the corallites multiply by successive fissiparity, but are soon individualized and are grouped without order in a massive coral.

Among the simple LITHOPHYLLIACEÆ, (*Mussaceæ*) we have one which Prof. Duncan has referred to his genus *Antillia*. It is a discoid form whereas in the definition of the genus, (*Quart. Jour. Geol. Soc. Vol.* 20, *p.* 28), it is said the coral is short, turbinate, and pedicellate. I subjoin the Professor's definition of the species which is a fossil, but as I have met another species it may be desirable to separate the discoid forms into a distinct genus.

ANTILLIA LENS, *Duncan.*

Coral is the shape of a Cyclolite (*Fungidæ*); the base is circular in outline, nearly flat, the concavity being very slight; the epitheca is pellicular and faint; the costæ are seen as radiating flat elevations, those corresponding to the smallest septa being the smallest; the margin of the base presents slightly exsert equal processes, which are the septa; the upper surface of the coral is convex and nearly hemispherical, the depression for a small essential columella, formed by processes from the base and septal ends being slight; the septa are in six systems of four cycles; the primary and secondary septa are equal, and the tertiary are nearly as large; those of the fourth and fifth orders are somewhat less; all are very convex superiorly, and less so and nearly straight externally; the laminae are thin, and are very strongly marked by sharp ridges, which radiating from the basal part of each septum are more or less parallel, and give at the free margin a laterally dentate appearance; this appearance is less marked in the smaller septa; there is often a paliform process on the larger septa, near the columella, and the terminations of the ridges give the dentate character to the free margin of the septa; the endotheca is scanty, stout, and inclined. Breadth $\frac{3}{10}$ inch, height $\frac{2}{10}$ inch.

Locality Hamilton, Victoria, S. Australia.

Genus HOMOPHYLLIA, *Bruggemann*, 1877, *Ann. Nat. Hist.*, 1877, *Vol.* 20, *p.* 310.

Coral neatly turbinate, with a narrow somewhat expanded base ; outside of wall covered almost to the edge with a thin, closely adherent epitheca, through which the costæ are distinctly perceptible; costæ crowded, perfectly equal, prominent, minutely denticulate ; calice circular, deep ; septal edges crowded with narrow subequal teeth; columella very small, rounded in outline, closely tubercular.

The author remarks of this genus that it is established for the reception of *Caryophyllia australis* of Milne Edwards. It is distinguished by its scanty endotheca, which makes the calice deep, and the structure of the costæ and septa. He observes that if these peculiarities would not justify generic separation it would be necessary to unite all the simple *Mussaceæ* into one genus.

HOMOPHYLLIA AUSTRALIS, *Edw. & H. (as Caryophyllia.)*

Septa moderately prominent, rather thin, uniform in thickness, scabrous from small pointed granules ; systems quite distinct in six cycles, the last incomplete, primary and secondary equal ; teeth much crowded, middle-sized, narrow, straight, rather obtuse, those in the middle generally longest, decreasing towards circumference and centre ; tertiaries narrow, with fewer and longer teeth, fourth cycle similar and not reaching the columella, fifth and sixth cycle half as long and scarcely dentate; columella much reduced and low, surface subpapillose. Very young specimens, 4 to 8 mil. in diameter, are broadly attached and very shortly cylindrical, almost discoid, epitheca present from the beginning. Adult 20 mil. alt., diameter of calice as much as 30.

Hab. Port Lincoln, Australia, and Chinese Seas ?

"M. Edwards (says Dr. Bruggeman) has mistaken this coral for the young of a West Indian *Isophyllia ;* the description of *Isophyllia australis* (*Hist. Nat. Cor., vol.* 2, *p.* 375) has nothing to do with the species under consideration. The latter is found growing socially on rocks, and occasionally it happens that two

neighbouring specimens touching each other become intimately united by their walls. This spurious compoundness is caused by contact and not by fissiparity. There can be no doubt that *Homophyllia* remains solitary at all ages."

It occurs to me that there is a close relation between the genus thus described and *Cylicia* of the Astrangiaceæ, of which already three species are described from South Australia.

Third Division *Astræacea* or *Astræa* which have a massive corallum whose corallites intimately united by their costæ or walls multiply essentially by budding, the individuals being distinct from their origin though sometimes budding in another calice or near the central fossa, thus giving rise to a kind of false linear arrangement.

Genus CYPHASTRÆA, *Ed. & H.*, 1848.

Corallum a convex and gibbous mass broadly adherent; costæ and exotheca much developed and forming a compact and very dense tissue with a granular or hispid surface; edges of calices free and round; columella papillose, conspicuous; septa very exsert, narrow; laminæ at the wall and divided into processes in their internal moiety, with fine teeth which are largest near the columella; budding extra-calicinal. The very compact structure at the muro-costal region, and the lax open tissue at the central region easily distinguish this genus. The species are all small.

CYPHASTRÆA MICROPTHALMA, *Lamarck* (*Animal. s. vert., 2nd ed. t. 2, p.* 408.)

Corallum gibbous, calices close, circular, salient; costæ slightly so; interstices strongly granular; columella papillose; two cycles with a third in two or four systems in which the secondaries equal the primaries, so that there are in appearance 8 to 10 simple systems; septa slightly exsert, thick at the wall, thin within, toothed with a little paliform tooth near the columella; in section it is seen that the wall and exothecal dissepiments are thick and horizontal, but often lost in the general compactness of the tissue; septa deeply divided into three long and ascending teeth; endothecal dissepiments very thin, simple, close and hardly sloping. Calices $1\frac{1}{2}$ mil. in diameter.

CYPHASTRÆA MUELLERI, *Ed. & H.*

Less hispid than the preceding; columella rudimentary, septa unequal and exsert, probably only a variety.

Both the above species are probably found on the S. E. coast, near Port Jackson, though I have no well-authenticated habitat.

Genus PLESIASTRÆA. *Ed. & H.*, 1846.

Corallum a convex mass, rising from a costulate plateau; calices shallow, circular, edges free; columella spongy; costæ and exotheca well developed; septa exsert, stout, continuous, and denticulate; *pali well developed* before all the septa except the last, budding always in the intercalicular spaces. The genus distinguished from all the Astreacæa with free calicular margins by the presence of pali.

PLESIASTRÆA UEVILLEI. *Ed. & H. Syn. Astrea galaxea. Quoy & Gaimard. Voy. de l'Astrolabe, Zooph. p.* 216, *pl.* 17, *f.* 10-14.

Corallum somewhat flat with sub-lobed edges; epitheca on the edges rudimentary; calices very slightly salient, close but distinct, circular or sometimes a little deformed; columella rudimentary; three cycles, but a fourth in two systems where the primary equal the secondary, thus giving the appearance of eight systems of three; septa rather broad, hardly exsert, thin, finely and regularly dentate, striate, and granular; pali broad, little exsert, rather thin, the primaries the strongest. In section the exothecal dissepiments are almost horizontal, 1 mil. apart; columella of a very lax tissue, scanty and formed of lamellar processes; endothecal dissepiments extremely thin, sometimes wavy, not always parallel, sloping inwardly, $\frac{3}{4}$ mil. apart; wall compact, rather thick, seldom or only slightly united to others. Diam. of cal. 4 to 5 mil. In shallow places King George's Sound. Messrs. Q. and G. say that the animal is confluent and of a beautiful grass green.

PLESIASTRÆA PERONII. *Ed. & H.*

A gibbous corallum; calices unequal, from 3 to 5 mil. in diam., close, unequally salient, edges very distinct, generally circular; three cycles complete, rarely a few septa of a fourth; septa strong, feebly denticulate, slightly exsert, very unequal according to the orders. Common from Port Stephens southwards on the E. coast through Bass Straits.

Division ASTRANGIACEÆ.

This is a fifth group of the *Astræa*, established by Messrs. Edwards and Haime, to receive those forms which multiply by buds on a basilar expansion and whose corallum is always very short and creeping.

Genus CYLICIA. *Ed. & H.*, 1851.

Corallum spread over submarine bodies composed of coralites altogether independant of one another but grouped together; they are produced by budding on a base which does not harden; they are largely adherent, extremely short, subcylindrical, a little oblique and surrounded by a complete epitheca; calices subcircular, excavated, and deep; septa thin, rather close, not exsert, the principal have a subentire edge, the others very deeply toothed; columella papillary and well developed.

When these corals are found dead the connecting expansion has disappeared and they look like a close association of numerous calices irregularly scattered over the rock and encrusted with *Polyzoa*.

CYLICIA RUBEOLA. *Quoy and Gaimard, (as Dendrophyllia). Voy. Zooph. p.* 97, *pl.* 15, *f.* 12-15. *Angia rubeola. Ed. & H., Ann. Sci. Nat.*

Corallites very short, a little inclined; epitheca projecting as a thin entire edge; calices circular or subcircular; fossa wide and deep; columella well developed, formed by the styliform lobes of septa or undistinguishable from them, they gradually lengthen towards the edge; three cycles in six systems, but the third wanting in two systems, giving the appearance of five ternary

systems; septa very thin, rather close, finely granular, primaries broad and subentire for half the length and then like all the others deeply lobed into styliform processes; tertiaries bent towards the secondaries and uniting with them close to the columella. Alt. 5, diam. 4, depth of calice 4.

The original species of this pretty coral came from the Thames River, N. Zealand. Another species named *C. Verreauxi*, Ed. & H., was described as from New Holland. This differs from the foregoing in having the three cycles complete in all the systems with the rudiments of a fourth. Prof. Tate has sent me specimens from Port Adelaide, which bridge over the differences between the species as there are the rudiments of a fourth cycle, and the systems are not complete, and some specimens from King's Island have the systems complete but with only three cycles. All the specimens I have met are united by polyzoa (*Cellepora* and *Lepralia*) and their cellular structure in fragments at the base of the calices might easily mislead one into the notion that there was a reticulate cœnenchyma.

Cycilia tenella is said to come from Australia, but Messrs. Ed. and H. refer it to the Cape. It is distinguished by its inconspicuous columella and three complete cycles.

Cylicia Smithii, also referred to Australia has a finely granular epitheca, well developed papillary columella, and four complete cycles; the calice is very shallow. I have not seen either of these two species. Prof. Duncan refers all, except the first species, to the Cape. There is evidently some confusion about both the species and the habitats which I have not been able to clear up.

CYLICIA MAGNA. N. S. Pl. 4, Fig. 3, a, b, c.

Corallum large, broadly and obliquely turbinate, and largely adherent; epitheca very solid in rugged concentric folds through openings of which the slender close costæ are seen at intervals; calice roughly circular, either open and shallow or narrow and deep; septa of five cycles in six systems all complete except in young individuals where the higher orders are rudimentary in some systems, not exsert, but sloping away from the epitheca,

which slightly overlaps the edge of the wall; primaries and secondaries equal in thickness and reaching the columella; tertiaries very nearly reaching it; fourth and fifth orders very thin towards the centre, but reaching fully two-thirds of the distance to the centre; fifth cycle very thin and small and reaching about a fourth of the distance or even less. All orders entire for a fourth of their length, and undulating, then deeply and narrowly lobed, the fourth cycle dividing into narrow, tall, styliform processes; all very granular; columella very little prominent and consisting of a few broad and irregular granular lobes quite at the bottom of the calice, easily distinguished from the septal lobes being more closely granular and of more solid form; endotheca confined to a very few dissepiments between the higher orders and primaries near the edge of the calice; costæ (where visible through the incomplete epitheca) quite laminar, corresponding to the septa and slightly lobed, intercostal spaces deep, exotheca rather abundant in horizontal or curved and inclined dissepiments. Alt. 12 to 15, lower edge a third less; diam. of calice 13 to 17, millim. Depth about $\frac{4}{5}$ of alt.

St. Vincent's Gulf, S. A. These specimens were sent to me by Prof. Tate, F.G.S., who has not recorded anything of the stolon or mode of increase, but I have no doubt that they should be referred to the Astrangiaceæ, though from the definition of Dr. Bruggeman's genus *Homophyllia*, it does not seem easy to distinguish from descriptions alone, what that learned author most relies upon as generic and specific in character. Perhaps it would be better to remark that the septa in his genus are exsert, and the teeth never become separate lobes. Of course this is supposing there is no means of ascertaining the presence or absence of a stolon.

CYLICIA QUINARIA, n. s. Pl. 5, Figs. 3, a, b, c, d, e.

Corallum cylindrical, adherent by its entire breadth; height equalling or exceeding the diameter; costæ, when present, thin, with styliform lobes, and not corresponding with any of the cycles, but quite irregular and separated by wide, smooth, inter-

costal spaces, not very salient, but from about the middle downward developing into long buttresses which are adherent to the support; calice circular, deep, margin in one plane or very slightly inclined; septa not exsert, but sunken, in *five* systems of four cycles complete in each system; they are close, thin, the three first nearly equal, irregularly lobed and granular, the third orders often, the 4th and 5th always represented by a series of oblique styliform projections from the wall; primaries and secondaries descending perpendicularly; in the centre two or three styliform processes quite similar to the lobes of the septa from the columella. Alt. 6, diam. from 3 to 6 millim.

This singular coral which is referred to the genus *Cylicia*, was found amongst the collections of the late W. S. Macleay, with no locality indicated. But as all the specimens, about 15 in number, were encrusting a small piece of sandstone of the kind found at Port Jackson, and as there were many species of Polyzoa upon the stone, such as are living in the same place, I have very little doubt that the specimens came from somewhere near Sydney Harbor. Among all the specimens only one of them showed the remarkable buttress-like ribs. This gave it a resemblance to the British *Paracyathus pteropus*, Gosse. Even in this case they were only on half the corallum. The rest of the specimens were so encrusted with Polyzoa, (chiefly *Lepralia)* that these interesting organs could not be made out on them. It is further worthy of remark that the costæ though not corresponding with any of the septa were lobed like them; the styliform character of the higher orders of septa made their separation from the columella difficult, if not merely arbitrary.

Fifth Family of MADREPORARIA APOROSA.— FUNGIDÆ.

In the previous groups we have been dealing with families in which the interseptal spaces were open throughout, *(Turbinolidæ, Dasmidæ)* or were crossed at regular distances by lamellar traverses *(Oculinidæ, Astreidæ)*. The *Fungidæ* have a different character which is that the lateral faces of the septa develope bosses or tubercles which approach the opposite septum and

fastened to it so that the visceral chambers are traversed by bars or barriers, often of considerable extent and height, but never completely closed by them. These organs are called *Synapticulæ*. They are generally accompanied in most of the family by vertical or slightly oblique ridges of compact sclerenchymatous tissue on the faces of the septa from which the synapticulæ arise. This tissue is sometimes continuous and equal, but sometimes it is interrupted at regular intervals. The *Fungidæ* are divided into two subfamilies: 1, *Funginæ*, with the wall or common plateau porous and generally roughly tubercular or subspinous; 2, *Lophosorinæ*, with the wall neither perforate nor tubercular.

In the first division of this family we have none of the genera in extratropical Australia. *Polyphyllia pelvis*, is said by Messrs. Quoy and Gaimard to occur in New Zealand, which is very singular as we have no *Fungidæ* in similar latitudes on the Australian coasts. The genera *Fungia* and *Polyphyllia* are both very well represented in N.E. tropical Australia, and I believe most of the Pacific species are found in the Barrier Reefs.

In the second division we have two species, but only found within a very few degrees of the tropics and scarcely straying outside them; they are both in the genus *Cycloseris*.

Genus Cycloseris. *M. Ed. & H.*, 1849.

Corallum discoid, simple, without a trace of adherence; wall horizontal with finely granular numerous costæ and no epitheca; septa very numerous, (5 to 8 cycles) the smaller united to the larger by the thin inner edge and the superior edge of all finely serrated.

Cycloseris cyclolites. *Lamarck.*

Corallum an ellipsoid, thick, and rising in the centre to a height of about half the major axis, concave beneath, where it is granular in the centre; costæ numerous, close, fine, in cycles, the higher orders smaller and arising near the edge when they are prolonged and lamellar; central fossa narrow, deep, generally extended in the direction of the major axis; seven to eight cycles the last not present in all the systems; septa elevated, the three first orders

thicker internally and often united to the smaller for a great part of their surface, granular in radiate lines; very numerous and giving the edges of the septa quite a mossy aspect; columella and papillæ at the bottom of the fossa; synapticulæ numerous but not easily seen as the septa are so close. Long. 50, lat. 35, alt. 25 millim.

Lady Eliot's Island, Harvey's Bay, (lat. between 27 and 26), and so up to the Barrier Reef, though rare. Common in New Caledonia.

CYCLOSERIS SINENSIS. *M. Ed. & H.*

Corallum nearly circular, very thin, slightly exsert, and a little concave beneath; costæ in cycles but very uniform in size, close, very small, the higher orders and a small part of the centre being only a series of granules; fossa open, more or less extended in a line of the slightly longer major axis; columella conspicuous; a crowded mass of long almost circular papillæ; septa in eight cycles not always complete in some of the systems, the higher orders of the last being wanting or rudimentary; all very thin, very granular, the primaries and secondaries being just a shade thicker and more raised at the fossa; edges not serrated but irregular; synapticulæ irregular, not numerous, solid; granules subspinous and giving the laminæ a mossy appearance as seen from above; the septa of the higher orders are often fenestrated and often unite by their inner edge to the older. At their base, the synapticulæ appear as solid ridges. Diam. from 20 to 30, alt. 5 to 8 mill. Scarcely 2 millimetres difference between the major and minor axis. Localities same as preceding. Very common at Darnley Island. Rare outside the tropics.

CYCLOSERIS TENUIS. *Duncan.*

Corallum circular and very thin, slightly convex in the centre; fossa shallow, elongate; concave below with numerous costæ; septa distinct, distant, slightly dentate, in six systems of five cycles. Diam. 12, alt. 6 mil. River Gellibrand, Victoria. Fossil only. Prof. Duncan's definition is somewhat brief. The five cycles, however, sufficiently distinguish the species.

Genus PALÆOSERIS. *Duncan*, 1870.

This genus was founded by Prof. Duncan for a fossil which he had formerly described as *Trochoseris Woodsi*, but a minute examination induced him to place it among the *Lophoserinæ* as it was found to possess synapticulæ.

The corallum is simple, turbinate, and pedicellate; septa numerous; columella rudimentary; epitheca complete, dense, covering costæ.

PALÆOSERIS WOODSI, *Duncan*.

Corallum with small pedicel, cylindrical, conical, turbinate; calice wide, circular, shallow, margin thin; septa delicate, crowded, subequal, not exsert; six systems and five cycles with half of a sixth in each system; smaller septa generally joining the larger which reach the central fossula; laminæ marked laterally by synapticulæ. Alt. 16, lat. 13 mil. Muddy Creek.

MÆANDROSERIS AUSTRALIÆ, *L. Rousseau*, 1854, and *Favia Bowerbankii*, Val. are species which I believe belong to the tropical regions of Australia, amid the islands of the great Barrier Reef, though cited simply as from Australia by authors. To these must also be added *Prionastræa australiensis*, and *Merulina ramosa*. *Echinopora rosularia*, Lamarck, is a reef-building form which is cited as coming from "*Terre de Van Dieman*." From this circumstance it has been attributed to Tasmania. It must be, however, that the Terre de Van Dieman in North Australia is meant, because no such coral is known outside the tropics in Australia, and therefore certainly not in Tasmania, formerly known as Van Dieman's Land. As far as I can gather, the term Terre de Van Dieman as applied to part of North Australia, is only used by old French geographers. It is thus distinguished on the map prefixed to the work of De Brosses. The coral occurs at the Seychelles and Feejee. I have also seen specimens from the northern parts of the Barrier Reef. *Rhodaræa calicularis*, Lamarck, is another tropical reef-building form which is cited generally as from Australia. It is a *Porites* without a columella.

Genus LOPHOSERIS, *M. Ed. & H.*, 1849.

Corallum compound, adherent, foliaceous in crests or irregular lobes, covered with radiate and confluent calices; columella tuberculous and sometimes rudimentary; the common surface destitute of epitheca and finely striate. The very thin expansions of this coral with calices on generally both sides distinguish it from all the other Fungidæ.

LOPHOSERIS CRISTATA. *Ellis & Solander.*

Corallum in a tuft of erect crested thin expansions with calices on both surfaces; the expansions are much thinner in the edges, are raised and coalesce with many vertical ridges; calices close, and the septacostal rays elongated; fossa distinct and somewhat deep; columella a little tubercle or absent; septa in three cycles the last wanting in one or two systems; secondaries nearly equalling primaries; tertiary very thin all slightly toothed at the edge and somewhat granular, principally developed vertically though a little bent; calices about 3 millim.

Manly Beach, Port Stephens, The Solitaries, Cape Byron, Moreton Bay.

LOPHOSERIS FRONDIFERA. *Lamarck.*

This species has the calices a little smaller than the last, with 16 to 18 very thin septa, close, alternately exsert, and scarcely serrated; the corallum is very small. If I am correct in my identification this is not very uncommon on the coasts of Queensland as far south of the tropics as Wide Bay.

Second order, MADREPORARIA PERFORATA. Corals formed almost entirely of porous or reticulated cœnenchyma; septa very distinct in character, composed primarily of six elements, but sometimes represented by a series of little bars or processes; transverse divisions, rudimentary, never forming floors or tabulæ; the wall which constitutes the greater portion is always perforated and does not develope costal laminæ; visceral chamber open from the base to the summit, and has neither traverses nor synapticulæ nor floors; there are two divisions in this section: 1st, *Madreporidæ*; mural system well developed and simply porous;

principal septa slightly, or not perforate; 2nd, *Poritidæ*; entirely composed of reticular sclerenchyma; septa represented by little bars or processes.

The Madreporidæ are again subdivided into three families: 1. *Eupsammininæ;* no independant cœnenchyma. 2. *Madreporinæ;* cœnenchyma abundant, six principal septa, two of which are much greater than the rest. 3. *Turbinarinæ;* septa six, equally developed.

First Fam., EUPSAMMINÆ.

Septa well developed and forming many cycles; primaries equal but the last cycle bent towards the preceding order, so that the calice has not the radiate appearance of most corals; wall formed of distant vertical sclerenchymatous nodules, united only at their points of contact so as to leave perforations which occasionally become obliterated below only. They are simple or compound corals; the corallites nearly always cylindro-conical without exotheca or peritheca; wall feebly costulate, scarcely ever with a complete epitheca,* the tissue being shagreened or velvetty in aspect; cycles 4, 5, rarely the rudiments of a 6th; the last cycle of whatever number, never forms straight rays but bent according to a simple law, thus:—If it be of four cycles, the fourth order diverges from the primary, and the fifth order from the secondary, until they meet or nearly meet in front of the tertiary, with which they are intimately united below. If there are five cycles it is the 6th, 7th, 8th, and 9th orders which diverge. Each half of the system will then resemble an entire system of four cycles; on one side the 6th system diverges from its adjoining primary, and the 8th from the tertiary, to unite together, and with the fourth which is between them; on the other side the 7th diverges from the secondary, and the 9th from the tertiary, to unite with the 5th which they bound on the left and right. Sometimes the penultimate bends towards the tertiaries and the tertiaries towards the secondaries, so that the primary alone is free; this peculiarity though always present is feebly manifest in some genera such as *Leptopsammia*, *Endopsammia*, and *Dendro-*

* *Dendrophyllia epithecata.* Duncan, a fossil of Tasmania, is a solitary exception.

phyllia, the last cycle is always more developed than the immediately preceding, to which also the same genera are an exception; the higher orders are also reticulate or incomplete in their tissue so as to be perforated or honeycombed; there is always a columella (except in some species of *Stereopsammia*), and it is of spongy texture.

Genus ENDOPACHYS, *Lonsdale*, 1845.

Corallum simple, straight, much compressed below; no trace of adherance; base keeled or with aliform appendages; costæ distinct, straight, formed by series of granules; columella little developed; septa exsert and granular; only two species hitherto known; one living, habitat unknown; and an Eocene fossil from Alabama, N. America.

ENDOPACHYS AUSTRALIÆ. N. S. Pl. 6, fig. 1, a, b, c.

Corallum elegantly cuneiform, somewhat tumid until close to the base, where it becomes much compressed; the edges of the major axis slope away from the summit until about two-thirds of the whole length and then suddenly bend towards a very fine point, leaving two somewhat aliform obtuse angles; the sides of the minor axis are convex but slightly more on one side than another; costæ finely granular, distinct, raised, rounded, corresponding to the septa; a few of the higher orders uniting with older at the compressed part, and the outer ones becoming curved round and ceasing at the alæ, the rest gradually tapering and continuous to the basilar point; interseptal spaces narrower than the costæ and perforated; calice broadly elliptical, the ends of the major axis being a little lower than the rounded minor axis on which the septa make conspicuous projections; septa spinously granular, in six systems of four cycles; first and second conspicuously exsert; the fourth and fifth uniting with the third order about half way, and these again uniting with the secondaries close to the columella so that the primaries are alone free; all uniting with the columella which is reduced to a thin open almost laminar tissue. There are rudiments of a fifth cycle in the four systems at the end of the major axis, and here also the septa are crowded and irregular. Wall very conspicuous though thin. Alt. 15, maj. axis 13, min. 10 mill. Off Port Jackson, 80 fathoms.

Genus BALANOPHYLLIA, *Searles Wood*, 1844.

Corallum simple, fixed by a large base or pedicellate, more porous than Dendrophyllia; no costal appendices; costæ fine, close, subequal; columella well developed, but never projecting from the bottom of the calicular fossa; septa thin, close, the last cycle well developed and complete; the distinct costæ and the complete development distinguish this genus, which is well represented both as a living and fossil form in Europe. In our Australian tertiaries it had a large development, but so far, I am only acquainted with one living species in our seas.

BALANOPHYLLIA BUCCINA, N. S. Pl. 5, figs. 5, a, b, c, d, & Pl. 4, fig. 5.

Corallum narrowly pedicellate and generally clasping a small shell, subcylindrical or compressed: broad at the summit and rapidly tapering, rarely straight, nearly always curved in the direction of the shorter axis; calice elliptical, lower at the ends of the longer axis; epitheca moderately developed, extending about half way up the calice, or appearing in a series of very undulating, disconnected, concentric rings, which are thick, projecting, and corrugated; costæ in series of scattered granules, and sometimes hardly traceable under a uniform worm-eaten appearance; the wall is very open and honeycombed; fossa one-third the depth of the whole corallum, and having a broad flaring appearance; columella very loosely spongy and rather broad; septa slightly exsert, granular and porous, the higher orders almost as loosely reticulate as the columella, in six systems of five cycles, the sixth and eighth orders uniting in front of the fourth, and the seventh and ninth in front of the 5th, close to the wall, and both the laminæ thus formed again uniting in front of the third at or close to the columella; primaries and secondaries free, evenly rounded, 6th order the most developed and very thick and jagged at the columella. Fully developed specimens, 25 to 30, major axis 18 to 23, minor axis 11 to 14, mil. In smaller specimens only four cycles; costæ very distinct, epitheca faint, in pellicular translucent rings near base. Two young specimens, sometimes cemented together.

Cape Three Points and off Port Stephens, 70 fathoms. Worn specimens sometimes washed up at Manly Beach and Wollongong. Always attached to shells (*Bittium*, *Turritella*, and small *Mitræ*) except when the pedicel was broken. A species very distinct from any of our tertiary fossils. Its broad and solid cup and generally curved form are very characteristic.

It will be remarked that I have figured one of the specimens with a conspicuous boss on the side. This may be a *bud*, and if so the species will have to be transferred to *Dendrophyllia*. The general character of the corallum and the septa is not in favor of such a conclusion.

BALANOPHYLLIA SEMINUDA, *Duncan*.

The corallum has a wide base with a constriction immediately above it, and is cylindrical, but slightly wider at the calice than elsewhere; the epitheca is very dense for half the distance up the corallum and is wanting elsewhere; the costæ, invisible below, are distinct where the epitheca does not exist above; they are formed by vermiculate projections.; the calice is circular in outline; its margin is thin, except at the origin of the primary and secondary septa, where it is thick and cellular, and its fossa is very deep; the septa are unequal, exsert, curved above, and more or less vertical at their inner edge; they are marked with ridges, which are directed inwards and upwards, and with endothecal ridges crossing the first kind; the primary septa are stout and very exsert, and the secondary septa are smaller and less prominent; the tertiary septa, after their union with those of the fourth cycle are very stout and reach the columella; the septa of the fourth and fifth orders join the tertiary about half way to the columella; the columella is small and spongy, and is situated very deeply in the fossa. Height of the corallum 8-10 inch, breadth of the calice 3-10 inch.

Locality: Hamilton Tertiaries, Victoria.

BALANOPHYLLIA ARMATA, *Duncan*.

The corallum is subcylindrical, tall, compressed, and armed with a wing-like projection immediately above either side of the

base; the base is moderately large, and presents evidences of attachment to some substance during life; there is a slight constriction above the base; the epitheca is imperfect, and surrounds the corallum here and there in many lines; the costæ are distinct, wide, equal, and covered with spiny granulations; they are more or less continued over the small lateral wing-like projections; the calice is elliptical in its outline, shallow, and with a sharp, narrow, and slightly cellular margin; the columella is large, long, and spongy; the septa are unequal, not exsert, stout and granular; there are four cycles of septa in six systems; the septa of the first, second and third orders reach the columella, and those of the higher curve towards and meet the tertiary midway between the wall and the columella. Height of corallum 1 2-10th inch, breadth of calice $\frac{1}{2}$ inch.

Locality: Hamilton Tertiaries, Victoria.

BALANOPHYLLIA SELWYNI, *Duncan.*

The corallum is subcylindrical and slightly compressed, and has a large base with a slight constriction above it; the costæ are distinct, flat above and rounded midway, and below finely granular superiorly, and marked with one series of large granules inferiorly; the epitheca is absent; the wall is moderately developed; the columella is large and long; the septa are very stout; there are four cycles of septa, in six systems, and the higher orders unite with the tertiary at about one-fourth of the distance from the wall to the columella; the calice is compressed and elliptical. Height 1 inch, greatest length of the calice $\frac{1}{3}$ inch.

Locality: No. 3, upper coralline beds, near C. Otway, Victoria.

BALANOPHYLLIA FRAGILIS, *Duncan.*

The corallum is long and conico-cylindrical in shape, twisted and curved; the epitheca is quite rudimentary, in the form of slight transverse bands; the costæ are flat and marked with one series of small, distinct, sharp, spiny granules, or with a ridge; the wall is very thin and hardly cellular; the columella is very

small; the septa are plain, long, slender, and irregular; the higher orders unite with the tertiary close to the wall; there are four cycles in six systems, the fifth order being occasionly absent; the endotheca is tolerably developed. Height of corallum, $\frac{3}{4}$ inch; length of calice, $\frac{1}{4}$ inch. Locality: Muddy Creek, Hamilton Tertiaries, Victoria.

BALANOPHYLLIA AUSTRALIENSIS, *Duncan.*

The corallum is pedicellate, long, cylindrical, tapering and curved; the calice is elliptical; the fossa is shallow; the septa are not exsert, are thin, marked with arched ridges; and there are four cycles in six systems, with a very few laminæ of a fifth cycle; the higher orders unite with the tertiary close to the wall which is very thin; the columella is large; the epitheca is scanty, and surrounds the corallum at certain parts only; the costæ are vermiculate, and slightly spinous. Height of corallum, $1\frac{1}{2}$ inch; length of calice, $\frac{4}{10}$ inch. Locality: Muddy Creek, Hamilton Tertiaries, Victoria.

BALANOPHYLLIA CYLINDRICA, *Michel, sp. Var. A.*

The corallum is cylindro-turbinate and curved at the base, which is not pedicellate but sharp; the calice is large, shallow, and very open; the epitheca is complete and covers the faintly distinguishable costæ; the wall is moderately stout and cellular; the columella is moderately developed; the septa are stout; and there are four cycles in six systems; the higher orders unite with the tertiary about midway. Height of corallum, $\frac{7}{10}$ inch; breadth of calice, $\frac{4}{10}$ inch. Locality, No. 1, $1\frac{1}{2}$ mile west of Cape Otway. Variety B. Corallum more slender, and columella larger than in variety A; the same locality.

BALANOPHYLLIA ULRICHI, *Duncan.*

The corallum is cylindro-conical, slightly curved, has a small pedicel and a large open calice; the epitheca is dense and complete inferiorly; but above the costæ are uncovered and very well marked, equal, rather prominent, separate, and finely granular; the columella is small; the septa are slender; and

there are four cycles in six systems ; the fossa is deep and the margin thin. Height of corallum 6-10th inch, breadth of calice 3-10th inch. Locality No. 1, 1½ mile west of Cape Otway, Victoria.

BALANOPHYLLIA TUBULIFORMIS, *Duncan*.

The corallum is tall, cylindrical, and tubular in shape ; there is no epitheca ; the costæ are equal, flat, vermiculate, and separated by distinct spaces ; the calice is circular in outline, rather less in calibre at the margin than elsewhere, very deep, and it has a wide margin ; the wall is stout and cellular ; the columella is small, and at the bottom of the deep fossa ; the septa are stout, and very granular ; and there are four cycles in six systems ; there is a very slight in-bending of the higher orders ; and the septal arrangment has very little of the Eupsammian type. Height of the corallum, 6-10th inch ; breadth of the calice, 3-10th inch. Locality : Muddy Creek, Hamilton Tertiaries, Victoria.

BALANOPHYLLIA CAMPANULATA, *Duncan*.

The corallum is pedicellate, has a slight constriction immediately above the small base, and expands regularly into an elongate bell-shape ; the epitheca exists inferiorly, but it is very delicate and permits the flat costæ to be distinguished ; the calice is elliptical, and the margin is slightly everted ; the wall is moderately developed ; the columella is large, long, spongy, and prominent ; the septa are stout ; there are four cycles ; and the septa of the fourth and fifth orders unite with the tertiary midway between the wall and the columella ; the tertiary septa, after the junction with the orders, are as large as the primary and secondary septa ; the laminæ are granular ; the costæ, where uncovered, are separated by distinct intercostal spaces with numerous foramina ; they are slightly unequal, and have both granulations and foramina on their flat external surface ; there are rarely more than two rows of granules, and they are scarce. Height of the corallum, 8-10th inch ; breadth of calice, 3-10th inch. Locality No. 4, clay beneath "coralline beds," near Cape Otway. It is associated with *Trigonia semiundulata*.

Genus HETEROPSAMMIA, *Ed. & H.*, 1848.

Corallum simple, straight, fixed in a univalve shell which it completely envelopes continuing to grow at the base during life-time; no epitheca; no costæ, but the exterior surface covered with fine striæ and closely marked with short twisted vermiform ridges composed of crowded granules; columella spongy and well developed; septa thickened exteriorly and spongy.

HETEROPSAMMIA MICHELINI, *Ed. & H.*

This coral is very short and has a large rounded swollen base, much larger than the calice which is a figure of 8. Specimens of doubtful locality have been brought to me. I am sure, however, that it occurs within the tropics of N.E. Australia, and of much larger size than the specimen figured by Milne Edwards, being as much as 20 mill. high, 25 long, and 20 broad.

HETEROPSAMMIA ELLIPTICA. N. S. Pl. 6, figs. 3, a, b.

Corallum approaching cylindrical, sloping somewhat towards the base which is very wide and encrusted with serpulæ, polyzoa, &c., so that the enclosed shell is not visible; no epitheca, but the surface densly covered with fine points or elongated granules, the irregular lines between which are somewhat wider than in the last species, the lines of the septa and the spongy texture is only seen near the calice but the whole surface is visibly perforated and velvety; calice elliptical, the sides of the long axis parallel, the short sides rounded, wall spongy and thick, principal septa conspicuously exsert; fossa one-third depth of columella, at the base on which the loose spongy broad columella is very visible; septa in six systems of five cycles, the 6th and 7th orders bending towards one another in all the systems, not uniting, but curving a little back ere uniting with the columella; these orders are thin and much expanded at the base of the fossa; the primaries and secondaries of equal thickness and expansion throughout; above they are the most conspicuous orders, but below the 6th and 7th quite eclipse them; tertiaries but little distinguished; 4th and 5th orders very inconspicuous, all faintly granular, ridged and serrated at the edge. Alt. 28, maj. axis 21, min. 13, depth of fossa 9.

Port Jackson, 16 fathoms. A larger specimen but greatly worn, cast up on the beach at Manning River. Many doubtful young specimens from dredge at Sydney Harbor.

Genus DENDROPHYLLIA, *De Blainville*, 1830.

Corallum compound and generally branched; corallites cylindrical or cylindro-turbinate, arising from buds; costæ fine vermiculate formed of grains always more simple near to the calice, where also they are straighter; calice tubercular; fossa deep; columella more or less developed and prominent; septa thin, close, not exsert.

M. Edwards separated from the genus all *Dendrophylliæ* which had the last cycle incomplete, but Prof. Verrill, and after him Dana, has shown that this peculiarity is sometimes present or absent in the same species, and therefore the genus *Cænopsammia* must be abandoned. There are species of the genus recent and fossil in Australia, the latter hitherto only found in Tasmania. *D. axifuga*, *D. coccinea*, *D. Gaimardi*, and *D. Urvillei* are reported as existing in New Zealand. They are not known to me as Australian. Capt. Hutton, the well known naturalist at Dunedin, assures me that they are not found in New Zealand. My own opinion is not only in this, but in many similar instances, that the specimens of the voyage of the Astrolabe got mixed, and that the many tropical corals quoted by Messrs. Q. and G. as from Australia and New Zealand, really came from the Pacific Islands within the tropics. Certain it is that very few of their Australian or New Zealand habitats can be verified.

EXPLANATION OF PLATES.

PLATE IV.

Fig. 1. a. *Calice of* SPHENOTROCHUS EXCAVATUS, *enlarged.*
b. *Side view of septum, enlarged.*
c. *Side view of corallum, enlarged.*

Fig. 2. FLABELLUM IRREGULARE, *nat. size.*
Fig. 3. a. *Corallum of* CYLICIA MAGNA, *nat. size.*
b. *Another specimen, nat. size.*
c. *Calice of fig.* 1, *a., enlarged.*
Fig. 4. *One system of* BALANOPHYLLIA BUCCINA, *much enlarged.*

PLATE V.

Fig. 1. a. CONOCYATHUS COMPRESSUS, *corallum enlarged.*
b. *Calice, much enlarged.*
Fig. 2. a. DELTOCYATHUS ROTÆFORMIS, *corallum enlarged.*
b. *Calice, enlarged.*
Fig. 3. a. CYLICIA QUINARIUM, *enlarged.*
b. *Calice, enlarged.*
c. *Secondary septum, much enlarged.*
d. *Septum of fourth order, much enlarged.*
e. *Tertiary septum, much enlarged.*
Fig. 4. a. DUNOCYATHUS PARASITICUS, *immersed in* LUNULITES CANCELLATA, *Busk., much enlarged.*
b. *Side view of Lunulite, enlarged 4 diam.*
Fig. 5. a. BALANOPHYLLIA BUCCINA, *nat. size.*
b. *Another specimen, nat. size.*
c. *Another specimen, nat. size.*
d. *The same seen across minor axis, nat. size.*

PLATE VI.

Fig. 1. a. ENDOPACHUS AUSTRALIÆ, *major axis of corallum nat. size.*
b. *Minor axis of same, nat. size.*
c. *Calice, much enlarged.*
Fig. 2. a. CRISPATOTROCHUS INORNATUS, *corallum enlarged 2 diam.*
b. *Calice, much enlarged.*
c. *Costæ, much enlarged.*
Fig. 3. a. HETEROPSAMMIA ELLIPTICA, *corallum nat. size.*
b. *Calice, enlarged.*

On the Echini of Australia.

Supplemental Note to the Paper on the above subject.

By the Rev. J. E. Tenison-Woods, F.G.S., &c.

Since my paper on the Echini of Australia was in type I have found some additions to our fauna in this department, which I note in the following list.

Temnopleurus toreumaticus, *Klein*.

This species is found in all the Australian seas, temperate as well as tropical, but the extratropical specimens are small. Prof. Tate has sent me specimens from St. Vincent's Gulf (near Adelaide) obtained at a depth of two fathoms. It also occurs, though rarely, at Port Lincoln, and generally on the south and south-west coast.

Echinus angulosus, *Agassiz*.

This species is also found near and about Port Adelaide and St. Vincent's Gulf. Sometimes, though very rarely, washed up at Port Fairy, Western Victoria, and Hobson's Bay, Melbourne. It is thus described:—Test small, neat, thin, and compact-looking, very slightly depressed; on median I. space one principal vertical row of somewhat small tubercles, the rest small, irregularly scattered in neither vertical nor horizontal lines, but more closely packed between main row and poriferous zone. Secondaries and milliaries most numerous towards median line. In the A. space the arrangement is similar, median vertical rows composed of small secondaries, scarcely larger than those forming the vertical line in the poriferous zone. The zone itself is broad with one to three indistinct vertical rows of small secondaries. G. ring narrow; two O. plates reach the A. system, which with the O. plates is rather large. Secondaries on G. plate near the anal edge small, and anal plates but little tuberculated. There are three to four much larger A. plates the rest are small, dimi-

nishing in size to the A. opening. Actinal cuts marked, but not deep; spines slender, tipped with violet; shafts all shades between lightest yellow and violet. Diam., 34 to 52; alt., 16 to 28; mil.

HETEROCENTROTUS TRIGONARIUS, *Lamarck.*

I have lately been able to compare specimens of this urchin from the Mauritius, and am now convinced that it does not occur in Australia, and those specimens regarded as such are only varieties of *H. mammillatus*, with slightly angular spines; the true *H. trigonarius* has the spines tapering, much more slender and longer, and are very conspicuously angular, of a dark olive green color, edged with red.

Genus SCHIZASTER, *Agassiz*, 1836.

Test thin, elongate, apex posterior; anterior and posterior pairs of ambulacra differing greatly in size, the odd ambulacrum in a deep groove; petals sunken, divergent, anterior nearly parallel with odd groove; G. pores from two to three; peripetalous fasciole angular, close to petals; a narrow lateral fasciole starting from anterior ambulacra and passing under A. system with elongate triangular swellings; posterior lip of mouth prominent, beaked and curved back.

SCHIZASTER VENTRICOSUS, *Gray.*

Test thin, outline from above broadly elliptical, angular anteriorly; apical system subcentral, posterior with vertex immediately behind on the flat sloping space of medium interambulacra; petals narrowed almost to a point at apex; posterior pair of G. pores large, round; anterior small, forming an irregular square. Posterior petals concave outwardly, anterior arch only at the extremity, lateral ambulacra remarkably broad, the odd one in a deep flat rectangular groove with steep sides, forming a high keel in the median anterior A. space extending nearly from apex to peripetalous fasciole; the latter angular, broad, especially at extremity of anterior petals, re-entering on the median I. spaces; posterior extremity broad,

nearly vertically truncated, flat; A. system small, covered by plates, decreasing uniformly towards opening. Lateral fasciole running obliquely to ambitus from the middle of the anterior ambulacra towards posterior extremity; posterior extremity of actinal plastron lost in rounded posterior edge of test; tuberculation within peripetalous fasciole coarse, closely packed in all the I spaces, except the odd one. Long. 65; lat. 57; alt. 36 millim.

Habitat, East Australian coast, generally both within and outside tropics. I have seen a well authenticated specimen from Port Jackson.

SALMACIS BICOLOR, *Agassiz.*

In the list of the Echini of Australia, at p. 161, there is a description of the genus *Salmacis*. At the head of the page the name of *Salmacis bicolor* has been omitted, to which the subsequent description, beginning at the first line, refers.

The Fishes of Port Darwin.

By WILLIAM MACLEAY, F.L.S.

The collection of Fishes made for me at Port Darwin by Mr. Spalding during the last six months numbers about 120 species. It is interesting not only as regards the new species—21 in number—which it contains, and the many additions which it makes to the Australian Fauna of other previously known species, but also in the light which it throws on the geographical distribution of the Fishes of the Indian and Pacific Oceans. Almost all the species mentioned by Sir John Richardson as having been received from Port Essington nearly 40 years ago, seem to be found also at Port Darwin, and it is evident that the affinity of the Fish Fauna of North-Western Australia is much more to that of the Dutch East Indian Archipelago than to that of Torres Straits and North-Eastern Australia, which partake more of the

Polynesian character. As I am anxious to avoid swelling out this paper to an unnecessary bulk, I shall not give all the synonyms and references to each individual species I may require to notice. I think it will be sufficient to give references only to such well-known works as "Cuvier's and Valencienne's Histoire Naturelle des Poissons," Gunther's "Catalogue of the Fishes in the British Museum," and Dr. Blecker's "Atlas Ichthyologique des Ind. Or. Nederl." These are books which no ichthyologist should be without; indeed Gunther's Catalogue is absolutely indispensable to any one engaged in the study of Fishes.

Family PERCIDAE.

1.—Pseudolates cavifrons.

All. and Macl. Proc. Linn. Soc., N. S. W., Vol. I., p. 262, pl. III.

There are several specimens of this fish—one 30 inches long, the rest small. They were all taken in salt water, but I have little doubt that like its congener *Lates nobilis*, Cuv. and Val., it enters rivers.

2.—Lates Darwiniensis, n. sp.

D. 7 1/11, A. $\frac{3}{8}$, L. lat. 60.

Body compressed, narrow; height one-fourth of the total length, head one-third of the same; mouth moderate; forehead narrow between the eyes, the space being much less than half the diameter of the orbit; operculum with one acute spine visible; coracoid with four denticulations; præoperculum serrated on the posterior edge and armed with a large flat acute spine at the angle, and with three small teeth pointing backwards on the lower limb; the third dorsal spine is much the largest; the anal spines are all small; the fins, with the exception of the base of the pectorals, are nearly black, and are mostly covered with small scales, the soft dorsal most distinctly so on its lower half; the coloration is dark on the back and silvery yellow beneath.

I have only one specimen 9 inches long, and in bad condition. It was found dead near the sea.

3.—Serranus merra, *Bl.*

Cuv. & Val. Pois., Vol. II, p. 243.

Serranus hexagonatus, Gunth. Cat. Fish., Vol. I, p. 141, Var. B. Merra.

Epinephelus Merra, Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 55, Perc. Tab. 23, fig. 2.

Dr. Bleeker says that this species is identical with *S. faveatus, trimaculatus* and *nigriceps* of Cuvier and Valenciennes.

4.—Serranus fuscoguttatus, *Rupp.*

Gunth. Cat. Fish., Vol. I, p. 127.

Epinephelus fuscoguttatus, Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 57, Perc. Tab. 29, fig. 3.

Identical with *S. horridus*, C. and V.

5.—Serranus crapao, *C. & V.*

Hist. Nat. des Poiss., Vol. III, p. 364; Gunth. Cat. Fish., Vol. 1, p. 137.

Epinephelus pantherinus, Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 61, Perc. Tab. 8, fig. 1.

Dr. Bleeker makes this species identical with Cuvier and Valencienne's species *pantherinus, maculosus, bontoo*, and *suillus*.

6. Serranus corallicola, *C. & V.*

Hist. Nat. des Poiss., Vol. II, p. 251.

Serranus altiveloides, Bleek. Gunth. Cat. Fish.; Vol. I, p. 127.

Epinephelus corallicola, Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 53, Perc. Tab. 30, fig. 1.

7.—Serranus pachycentrum.

Cuv. and Val. Hist. Nat. des Poiss., Vol. II, p. 219; Gunth. Cat. Fish., Vol. I, p. 116.

My only specimen is about six inches long.

8.—Diploprion bifasciatum.

Cuv. and Val. Hist. Nat. des Poiss. vol. II, p. 101, pl. 21; Gunth. Cat. Fish., Vol. I, p. 174; Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 71, Perc. Tab., 68, fig. 3.

Only one specimen.

9.—MYRIODON WAIGIENSIS, *Q.* and *G.*

Gunth. Cat. Fish., Vol. I, p. 175.

Centropristes scorpœnoides, Cuv. and Val. Hist. Nat. des Poissons, Vol. III, p. 36.

Centrogenys waigiensis, Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 68, Perc. Tab. 19, fig. 1, (not good).

This fish seems to be very abundant about Port Darwin.

10.—MESOPRION CARPONOTATUS.

Rich. Ann. and Mag. Nat. Hist., 1842, Vol. IX, p. 28. Gunth. Cat. Fish., Vol. I, p. 190.

11.—MESOPRION JOHNII.

Cuv. and Val. Hist Nat. des Poiss., Vol. II, p. 335; Gunth. Cat. Fish., Vol. I, p. 200.

Lutjanus johni. Bleek. Atl, Ichthyol. des Ind. Or. Nederl., p. 49, Perc. Tab. 60, fig. 3. Dr. Bleeker merges in this species the *unimaculatus*, *flavipinnis*, *yapilli*, and *caudalis* of Cavier and Valenciennes, and also puts down the *Serranus pavo* of C. and V., and Gunther as the young of the species.

It seems abundant about Port Darwin.

12.—APOGON RUPPELLII.

Gunth. Cat. Fish., Vol. I, p. 236, pl. 15, fig. 8.

Apparently not an uncommon species.

13.—APOGON OPERCULARIS, N. SP.

D. 7 1/9, A. 2/8, L. lat. 29. Pl. VII., fig. 1.

Height of body one-third, and length of head more than one-fourth of the total length; head broad, flat, and slightly arched between the eyes; the maxillary bone extends to below the posterior half of the orbit; præoperculum very finely serrated; third dorsal spine rather longer and stronger than the fourth; second anal spine long but not quite so large as the rays; scales very large; color dull vinous red with the fins, except the pectorals, more or less black; there

is a black mark extending from beneath the orbit to the angle of the præoperculum, and on the operculum there is a margaritaceous patch with a black patch above it.

I have many specimens of this fish, averaging nearly 4 inches in length.

14.—Apogon hyalosoma, *Blkr.*

Gunth. Cat. Fish., Vol. I, p. 231 ; Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 96, Perc. Tab., 31, fig. 1.

15.—Apogonichthys polystigma, *Blkr.*

Gunth. Cat. Fish., Vol. I, p. 246 ; Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 181, Perc. Tab., 44, fig. 4.

16.—Therapon servus.

Cuv. and Val. Hist. Nat. Poiss., Vol. III, p. 94 ; Gunth. Cat. Fish., Vol. I, p. 278.

Therapon jarbua, Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 112, Perc. Tab. 34, fig. 32.

17.—Therapon Cuvieri, *Blkr.*

Gunth. Cat. Fish., Vol. I, p. 282 ; Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 117, Perc. Tab. 37, fig. 2.

Identical with *Therapon quadrilineatus*, C. and V., and *Pelates sexlineatus*, *quadrilineatus* and *quinquelineatus*, of the same authors.

My specimens are all young.

18.—Therapon caudovittatus.

Richards. Voy. Ereb. and Terr., Fishes. p. 24, pl. 18, fig. 3-5; Gunth. Cat. Fish., p. 284.

19.—Helotes sexlineatus.

Cuv. and Val. Hist. Nat. des Poiss., Vol. III., p. 112, pl. 56; Gunth. Cat. Fish., p. 285 ; Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 118, Perc. Tab. 64, fig. 5.

Two specimens, 7 inches long.

20.—Pristipoma hasta.

Cuv. and Val. Hist. Nat. des Poiss., Vol. V, p. 184 ; Gunth. Cat. Fish., Vol. I, p. 289.

Pomadasys hasta, Bleek. Atl. Ichthyol. des Ind. Or. Nederl., p. 28; Perc. Tab. 47, fig. 3.

Identical with *P. Kakaan*, *commersoni* and *chrysobalion* of Cuv. and Val.

21.—DIAGRAMMA MULTIVITTATUM, N. SP., Pl. VII, fig. 2.

D. 12/20, A. 3/7, L. lat. about 65.

Height of body $2\frac{1}{2}$ in the total length, length of head $3\frac{1}{3}$ times in the same; diameter of eye one-fourth of length of head; lips fleshy with six pores beneath; maxillary bone not reaching the vertical from the anterior margin of the orbit; præoperculum densely denticulated behind; caudal fin slightly emarginate; fins spotless, spinous dorsal yellowish at the base, soft dorsal and anal darker and scaly, the 2nd and 3rd anal spines strong and of equal length; colour bluish silvery, becoming yellowish beneath the head and thorax. There are three or four irregular, longitudinal, pale, dark-edged stripes on the side of the head, and eighteen or twenty indistinct, subparallel yellowish stripes extending from the head and thorax obliquely backwards and upwards to the dorsal fin and back of the tail.

Two specimens, about 11 inches long.

The affinity of this fish is evidently to *D. hæmatochir*, or *polytænia*, Bleeker, but it is very distinct from both. In colouring it appears to approach *D. chrysotænia*, Bleeker, but in other respects it differs more from that species than from *D. polytænia*.

22.—SCOLOPSIS PERSONATUS.

Cuv. and Val. Hist. Nat. des Poiss., Vol. V, p. 259; Gunth. Cat. Fish., Vol. I, p. 360; Bleek. Atl. Ichthyol. des Ind. Or. Nederl. Spar., p. 9, Perc. Tab. 63, fig. 4.

23.—SCOLOPSIS LONGULUS, *Rich.*

Ann. and Mag. Nat. Hist., IX, 1842, p. 380; Gunth. Cat. Fish., Vol. I, p. 363.

Apparently common. The specimens vary from 8 to 8 inches in length.

24.—GERRES PUNCTATUS.

Cuv. and Val. Hist. Nat. des Poiss., Vol. VI, p. 480; Gunth. Cat. Fish., Vol. I, p. 260.

I am not at all satisfied of the identity of this species. The descriptions of it are poor and unfortunately it is not figured in Bleeker's splendid atlas.

25.—GERRES PROFUNDUS, N. SP., Pl. VII, fig. 3.

D. 9/10, A. 3/7, L. lat. 42.

This is the deepest shaped *Gerres* I have seen. The height of the body is one half the length without the caudal fin; the forehead between the eyes is flat, depressed, and less than the diameter of the orbit; first dorsal spine very small, the third is longer than the second and is $2\frac{1}{2}$ times in the height of the body; the second and third anal spines are about equal; caudal fins broad and furcate; the pectorals reach to the commencement of the anal rays; colour bright silvery, a faint spotted band along the middle of the dorsal fin.

Two specimens 7 inches long.

Family MULLIDÆ.

26.—UPENEOIDES TRAGULA.

Richards Ichth. Chin., p. 220; Gunth. Cat. Fish., Vol. I, p. 398.

I have some doubts about this species. My specimen is 5 inches long.

Family SPARIDÆ.

27.—LETHRINUS FUSCICEPS, N. SP. Pl. VIII, fig. 1.

D. 10/9, A. 3/8, L. lat. 47.

Height one-third of total length; profile straight; two diameters of the orbit between the eye and the muzzle, and rather more than four diameters in the length of the head; mouth narrow; teeth conical with two distinct canines in the lower jaw; tail emarginate; dorsal spines rather slender,

the connecting membrane opaque and yellowish at the base; scales uniformly yellowish; head brown and without scales except on the operculum and a single row behind the eye.

One specimen 9 inches long, and of a very compressed aspect.

28.—LETHRINUS PUNCTULATUS, N. SP. Pl. VIII, fig. 2.

D. 10/9, A. 3/8, L. lat. 45.

Height of body rather over one-third of total length; profile straight; snout about $1\frac{1}{2}$ diameter of the orbit from the eye; teeth sharply conical, canines small; dorsal fin rather high, the 4th, 5th, and 6th spines longest; tail slightly emarginate; 3rd anal spine longer and weaker than the 2nd, and shorter than the rays; 2nd ray of pectoral reaches to the commencement of the anal; dorsal and anal fins indistinctly clouded or spotted with black, the other fins immaculate and of a blackish hue; general colour dark with a black patch between the pectoral fin and the lateral line, and a series of vertical patches of black, formed of clusters of small spots, along the entire length of the body. I have a number of specimens of this species averaging from 5 to 6 inches in length. Some of them are of a much paler appearence than the one I have selected for description, but they are all evidently of the same species, and do not answer to any of those described by Gunther or figured by Bleeker.

29.—CHRYSOPHRYS HASTA, *Bl.*

Chrysophrys longispinis, Cuv. and Val. Hist. Nat. des Poiss., Vol. VI, p. 116.

Chrysophrys hasta, Gunth. Cat. Fish., Vol. I, p. 490.

Sparus hasta, Bleek. Atl. Ichthyol. des Ind. Or. Nederl. Perc. Tab. 67, fig. 3.

Family CHÆTODONTIDÆ.

30.—CHÆTODON OLIGACANTHUS, *Bllr.*

Gunth. Cat. Fish., Vol. II, p. 34.

A number of small specimens under two inches long.

31.—CHÆTODON AUREOFASCIATUS, N. SP., Pl. VIII, fig. 3.

D. 11/21, A. 3/16, L. lat. 40.

Height of body equal to the length without caudal fin; snout short; mouth very small; dorsal and anal fins rounded behind, the last four dorsal spines almost entirely hidden by scales; colour brownish yellow, with a golden band from the commencement of the dorsal fin through the eye to the breast, and another from near the back along the posterior edge of the operculum and through the base of the pectorals to the belly. Length 5 inches.

I have a number of very small specimens, perhaps the young of this species, but they are much darker in colour, and have a double band across the root of the tail.

31.—CHELMO ROSTRATUS, *L.*

Cuv. and Val. Hist. Nat. des Poiss. VII, p. 66; Gunth. Cat. Fish., Vol. II, p. 36; Bleek. Atl. Ichthyol. des Ind. Or. Nederl. Chaetod. Tab. VII, fig. 2.

32.—CHELMO MARGINALIS, *Richards.*

Ann. and Mag. Nat. Hist., 1842, Vol. X, p. 29; Gunt. Cat. Fish., Vol. II, p. 36.

Apparently very abundant about Port Darwin and very distinct from *C. rostratus*.

33.—HENIOCHUS MACROLEPIDOTUS, *L.*

Cuv. and Val. Hist. Nat. des Poiss. VII, p. 70; Gunth. Cat. Fish., Vol. II, p. 39.

Taurichthys macrolepidotus, Bleek. Atl. Ichthyol. des Ind. Or. Nederl. Chaetod. Tab. V, fig. 1.

34.—HOLACANTHUS SEXSTRIATUS.

Cuv. and Val. Hist. Nat. des Poiss. VII, p. 145; Gunth. Cat. Fish., Vol. II, p. 49; Bleek. Atl. Ichthyol. des Ind. Or. Nederl. Chaetod., Tab. X, fig. 2.

35.—HOLACANTHUS DUBOULAYI, *Gunth.*

Ann. and Mag. Nat. Hist., 3rd Series, Vol. XX, p. 67.

I have four specimens of this beautiful fish, the largest about eight inches long. The yellow reticulations on the brown part

of the body vary much; in one specimen they run longitudinally, in two others they form a network on the anterior portion, and one is reticulated throughout.

36.—SCATOPHAGUS MULTIFASCIATUS.

Richards. Voy. Ereb. and Terr., p. 57, pl. 35, fig. 4-6; Gunth. Cat. Fish., Vol. II, p. 60.

37.—SCATOPHAGUS TETRACANTHUS, *Lacep.*

Gunth. Cat. Fish., Vol. II, p. 60.

Scatophagus fasciatus, Cuv. and Val. Hist. Nat. des Poiss. VII, p. 109.

38.—DREPANE PUNCTATA, *L.*

Cuv. and Val. Hist. Nat. des Poiss. VII, p. 99, pl. 179; Gunth. Cat. Fish., Vol. II, p. 62.

Harpochirus punctatus, Bleek. Atl. Ichthyol. des Ind. Or. Nederl. Chaetod., Tab. III, fig. 4.

39.—PLATAX ORBICULARIS, *Forsk.*

Cuv. and Val. Hist. Nat. des Poiss. VII, p. 174; Gunth. Cat. Fish. Vol. II, p. 490.

40.—PSETTUS ARGENTEUS, *L.*

Richards. Voy. Ereb. and Terr., Fishes, p. 57, pl. 35, fig. 1-3 Gunth. Cat. Fish., Vol. II, p. 488.

Psettus rhombeus, Cuv. and Val. Hist. Nat. des Poiss. VII, p. 184.

FAMILY SCORPAENIDAE.

41.—SCORPAENA BYNOENSIS, *Richards.*

Voy. Ereb. and Terror, Fishes, p. 22, pl. 14, figs. 3-4; Gunth. Cat. Fish., Vol. II, p. 113.

Abundant, averaging 6 inches in length.

42.—SCORPAENA DIABOLUS, *C. & V.*

Cuv. and Val. Hist. Nat. des Poiss. IV., p. 229; Gunth. Cat. Fish., Vol. II, p. 117.

FAMILY TEUTHIDIDAE.

43.—TEUTHIS NOTOSTICTUS.

Richards. Ann. and Mag. Nat. Hist., 1853, Vol. XI., p. 172 Gunth. Cat. Fish., Vol. III, p. 320.

FAMILY BERYCIDAE.

44.—HOLOCENTRUM RUBRUM, *Rupp.*

Gunth. Cat. Fish., Vol. I, p. 35; Bleek. Atl. Ichthyol. des Ind. Or. Nederl. Trachyen., Tab. III, fig. 4.

Holocentrum orientale, Cuv. and Val., Vol. III, p. 147.

„ *marginatum*, C. and V., Vol. III, p. 161.

FAMILY POLYNEMIDAE.

45.—POLYNEMUS CŒCUS. N. SP., Pl. IX, fig. 1.

D. 7 1/14, A. 2/15, L. lat. 83.

Four pectoral appendages, the lowest little more than half the length of the others, and all shorter than the pectoral fin; anal spines scarcely visible, colour silvery, becoming darker towards the back; all the rays of the pectoral and caudal fins tipped with black, the latter long and much forked; a dense subopaque membrane covers each side of the head, through which the eyes are dimly traceable.

I have two specimens of this remarkable fish, each about 18 inches in length. Apart from the eye covering mentioned above, a peculiarity I have not seen mentioned as having been observed in any of the genus—this fish differs in many respects from the descriptions of P. *tetradactylus*, the only species to which it can be compared.

FAMILY TRICHIURIDAE.

46.—TRICHIURUS SAVALA, *Cuv.*

Cuv. and Val. Hist. Nat. des Pois. VIII, p. 184, pl. 224; Gunth. Cat. Fish., Vol. II, p. 347.

My only specimen of this beautiful fish is about 30 inches in length.

FAMILY ACRONURIDAE.

47.—ACANTHURUS GRAMMOPTILUS.

Richards. Ann. and Mag. Nat. Hist., 1842, Vol. XI., p. 176; Gunth. Cat. Fish., Vol. III, p. 335.

FAMILY CARANGIDAE.

48.—CARANX HIPPOS, *L.*

Gunth. Cat. Fish., Vol. II, p. 449, and Gunth. Fisch. des Sudsee, Journ. Mus. Godef, Heft, V, p. 131, Taf. LXXXIV.

Caranx paraspistes, Richards. Ichth. Voy. Ereb. and Terr., p. 136, pl. 58, fig. 5-7, and synonymous according to Dr. Gunther with *C. fallax*, *sem*, *Fosteri*, *sexfasciatus*, *Peronii*, *Lessenii*, and *Belengerii* of Cuv. and Val. Hist. Nat. des Poiss., Vol. IX.

This species seems to be abundant. I have them of all sizes.

49.—CHORINEMUS LYSAN, *Forsk.*

Gunth. Cat. Fish., Vol. II, p. 471.

Chorinemus Fosteri, Richards. Ann. and Mag. Nat. Hist., 1843, Vol. XI, p. 24, and said to be identical with *C. commersonianus*, *lyzan*, *Farkharii*, and *aculeatus* of Cuv. and Val. Hist. Nat. des Poissons, Vol. VIII.

FAMILY TRACHINIDÆ.

50.—OPISTHOGNATHUS DARWINIENSIS, N, SP. Pl. IX, fig. 3.

D. 28, A. 15.

Height one-fourth of total length; maxillary reaching nearly to the præopercular angle; space between the eyes not more than one-third of the diameter of the orbit; colour yellowish, closely spotted with brown; a large oval black spot between the 3rd and 7th spines of the dorsal fin; the rest of the fin, as also the anals, ventrals and caudal, yellow with black bars; pectorals finely spotted.

This species is evidently very distinct from *O. nigromarginatus*, Rupp, the *O. Sonneratii* of Cuv. and Val., described as being in height only one-sixth of the length, in having only 24 rays or spines to the dorsal, and in having a remarkable black band on the maxillaries, in all which it differs from the present species.

FAMILY BATRACHIDÆ.

51.—BATRACHUS DIEMENSIS, *Les.*

Richards. Ann. and Mag. Nat. Hist. Vol. X, p. 352, and Voy., Ereb. and Terr., p. 17, pl. 8, figs. 1, 2. Gunth. Cat. Fish., Vol. III p. 170.

Batrachus quadrispinis, Cuv. and Val., Vol. XII, p. 487.
Seemingly very numerous.

FAMILY PEDICULATI.

52.—ANTENNARIES UROPHTHALMUS, *Bleek.*

Gunth. Cat. Fish., Vol. III, p. 192.

Chironectes caudimaculatus, Richards. Voy. Ereb. and Terr., p. 125, pl. 60, figs. 8, 9.

A very common species.

53.—ANTENNARIUS COMMERSONII.

Cuv. and Val., Vol. XII, p. 426; Gunth. Cat. Fish., Vol. III, p. 192, and Journ. Mus. Godef.

FAMILY COTTINA.

54.—PLATYCEPHALUS INOPS, *Jenyus.*

Zool. of the Beagle, Fishes, p. 33 ; Gunth Cat. Fish., Vol. II, p. 180.

55.—PLATYCEPHALUS NEMATOPHTHALMUS.

Gunth. Cat. Fish., Vol. II, p. 184.

I have two specimens, the largest over a foot in length, of what I believe to be this species, but I only make out 7 dorsal spines instead of 8 as described.

FAMILY GOBIIDÆ.

56.—GOBIUS ORNATUS, *Rupp.*

Gunth. Cat. Fish., Vol. III, p. 21.

Identical with *ventralis*, C. & V., *interstinctus*, Richards., and *periophthalmoides*, Bleek.

57.—GOBIUS GIURIS, *Buch.*

Gunth. Cat. Fish., Vol. III, p. 21.

Said to be the same as *G. Kokius*, *Russellii*, *catebus*, *Kora*, and *celebicus* of Cuv. and Val.

58.—GOBIUS CRINIGER.

Cuv. and Val. Hist. Nat. des Poiss., Vol. XII, p. 82 ; Richards. Ichth. Voy. Ereb. and Terr., p. 2, pl. 1, figs. 3, 4; Gunth. Cat. Fish., Vol. III, p. 29.

59.—GOBIUS MAXILLARIS, N. SP. Pl. IX, fig. 2.

D. 6/11, A. 1/9.

Height of body nearly five times in the total length; length of head nearly one-third of the same; mouth large, the under jaw longest, the maxillary reaching nearly to the angle of the præoperculum; eyes lateral but very close together; spinous dorsal higher than the body; the first spine much the longest; the general colour is a pale reddish or yellowish brown, with a few indistinct crossbars of a deeper brown; the fins have a blackish tinge but are without spots; the opercles are dotted with minute spots.

Length about $2\frac{1}{2}$ inches.

60.—GOBIUS ALBOPUNCTATUS.

Cuv. and Val. Hist. Nat. des Poiss., Vol. XII, p. 57; Gunth. Cat. Fish., Vol. III, p. 25.

61.—APOCRYPTES BIVITTATUS, N. SP. Pl. IX, fig. 5.

D. 6/18, A. 16.

Height one-fourth of the total length; length of head one-fifth of same; snout short, about the diameter of the orbit from the eye; mouth nearly horizontal; maxillary reaching to the anterior third of the eye; tail rather pointed; dorsal fins nearly continuous; two canines in the lower jaw curved and horizontal; space between the eyes flat and wider than the orbit; colour yellowish with a dark vitta from the muzzel through the eye and continued more or less distinctly to the back near the tail, and another from the lower jaw through the root of the pectoral fin to the root of the tail; the fins are unspotted but the dorsal and anal are slightly washed with black. Some specimens are obscurely marked with transverse bands.

Length about 4 inches.

62.—GOBIOSOMA GUTTULATUM, N. SP. Pl. IX, fig. 6.

D. 5/26, A. 25.

Height one-twelfth of the total length; head one-seventh of the same; head rounded in front; eyes small, superior and not their diameter apart; mouth horizontal; teeth acute;

those in the upper jaw longer for the most part than those of the lower; on each side beneath the mandibles a row of about eight minute pointed fleshy appendages, skin without scales, but closely covered with minute papillæ. The general colour is of a pale lead hue, with minute and very distant spots of brown on the side of the head, pectoral fins, upper part of the side and back, and on the soft dorsal. There are also 3 or 4 narrow, short, transverse blue or black bands on each side. The first dorsal has the third spine elongate, and all extremely weak; its colour is darkish, the other fins are yellowish; the soft dorsal and anal very low, and the caudal long, pointed, and with about three narrow bars of brown.

The average length of this curious looking fish is about 3 inches.

63.—Periopthalmus Koelreuteri, *Valent.*

Gunth. Cat. Fish., Vol. III, p. 97.

I have this fish of all colours and sizes. I believe also that I have a new species among the Port Darwin things, but the specimens seem to be very immature.

Eleotris compressus, n. sp., Pl. IX, fig. 7.

D. 7 1/8, A. 1/10, L. lat. about 30.

Height one-fourth of total length; of compressed form; mouth small, subvertical; eyes half the diameter of the orbit from the maxillary, and three diameters apart; the first dorsal terminating in filaments, and scarcely so high as the second dorsal; tail not pointed; colour pale reddish brown, the soft dorsal and caudal fins minutely spotted, anal fin black edged. Length over 3 inches.

The short, deep, compressed form makes this fish look very unlike an *Eleotris*.

Family BLENNIIDAE.

65.—Salalias Spaldingi, n. sp., Pl. IX, fig. 4.

D. 12/20, A. 21.

Height of body about one-sixth of the total length; head vertical in front, with a long, skinny crest on the occiput and

a single fine tentacle over each eye; dorsal fin quite continuous and *without any notch*; the first few rays of the anal fin prolonged into filaments; colour greenish yellow, with more or less distinct double vertical brown bands over the whole body and with the dorsal fin spotted with brown.

Many specimens averaging three inches in length. The straight, unnotched dorsal fin will at once enable this fish to be distinguished from *S. biseriatus*, Cuv. and Val., and *S. geminatus*, All. and Macl., both of them species which in other respects much resemble the present one.

66.—NOTOGRAPTUS GUTTATUS.

Gunth. Ann. and Mag. Nat. Hist., 1867, Series III, Vol. XX, p. 64.

I have two specimens of this curious fish, about four inches long. I would add to Dr. Gunther's description, that there is a small skinny flap at the extremity of the upper lip, and that the spots on the head have a narrow white ring round them.

FAMILY TRICHONOTIDAE.

67.—TRICHONOTUS SETIGERUS, *Bleek.*

Cuv. and Val. Hist. Nat. des Poiss., Vol. XII, p. 316; Gunth. Cat. Fish., Vol. III, p. 484.

I have several specimens of this fish 7 inches in length. It differs somewhat from the descriptions of the species inasmuch as there are no brown blotches on the back.

FAMILY SPHYRAENIDAE.

68.—SPHYRAENA LANGSAR, *Bleek.*

Gunth. Cat. Fish., Vol. II, p. 340.

I have a number of this species averaging 5 inches in length.

FAMILY MUGILIDAE.

69.—MUGIL WAIGIENSIS, *Q. & G.*

Gunth. Cat. Fish., Vol. III, p. 435.

Synonymous with *M. macrolepidotus* and *melanochir* of Cuv. and Val.

70.—Mugil Peronii.

Cuv. and Val., Vol. XI, p. 138; Gunth. Cat. Fish., Vol. III, p. 452.

71.—Mugil dobula.

Gunth. Cat. Fish., Vol. III, p. 420.

72.—Agonostoma Darwiniense, n. sp., Pl. IX, fig. 8.

D. 5 1/8, A. 7, L. lat. 36.

Broad and depressed towards the head, compressed towards the tail; height of body at the root of the pectorals about equal to the width and $4\frac{1}{2}$ in the total length. Length of head $3\frac{1}{2}$ in the same; forehead broad; lips rather thin, the maxillary extending to the vertical from the middle of the eye; gape slightly descending, the lower jaw rather the longest; teeth small and numerous; tail rounded, with numerous small clear spots, and with the outer rays white tipped; the soft dorsal and anal fins have the terminal rays longest; the first of them is spotted like the caudal, and has the rays tipped with white; the anal is without spots and is tipped with yellow; the general colour is blackish, but many of the scales of the sides have pearly centres; the abdomen is yellow; a large broad anal papilla. Average length 8 inches.

Apparently a common fish. I am not confident that I am right in referring it to *Agonostoma*.

Family POMACENTRIDAE.

73.—Amphiprion tricolor.

Gunth. Cat. Fish., Vol. IV, p. 8.

74.—Amphiprion Clarkii, *Benn.*

Cuv. and Val. Hist. Nat. des Poiss. IX, p. 504; Gunth. Cat. Fish., Vol. IV, p. 5.

75.—Amphiprion bicinctus, *Rupp.*

Cuv. and Val. Hist. Nat. des Poiss. IX, p. 505; Gunth. Cat. Fish., Vol. IV, p. 8.

76.—Amphiprion melanopus, *Bleek.*

Gunth. Cat. Fish., Vol. IV, p. 8.

77.—AMPHIPRION BICOLOR, *Casteln.*

Proc. Zool. Soc., Vict., Vol. 2, p. 92.

One specimen about two inches in length.

78.—DASCYLLUS FASCIATUS, N. SP., Pl. X, fig. 2.

D. 13/13, A. 2/13, L. lat. 24.

Height one-half the length without caudal fin; form compressed; body and fins blackish yellow, the first with five rather indistinct vertical black bands, the first on the head the last on the tail; the dorsal fin, which is without notch, is clouded and blotched with black. Length about 2 inches.

A single specimen.

79.—POMACENTRUS SCOLOPSIS, *Q. & G.*

Gunth. Cat. Fish., Vol. IV., p. 28.

Pomacentrus taeniops, Cuv. and Val. Hist. Nat. des Poiss. V, p. 423.

80.—POMACENTRUS LITTORALIS, *K. & H.*

Cuv. and Val. Hist. Nat. des Poiss. V, p. 425; Gunth. Cat. Fish., Vol. IV, p. 32.

P. pristiger, Cuv. and Val., Vol. IX, p. 506.

81.—POMACENTRUS BANKANENSIS, *Blkr.*

Gunth. Cat. Fish., Vol. IV, p. 26.

In all my specimens there are two blue dots on each scale, so that in referring them to this species I may be wrong.

82.—GLYPHIDODON COELESTINUS.

Cuv. and Val. Hist. Nat. des Poiss., Vol. V, p. 464, and Vol. IX, p. 508; Gunth. Cat. Fish., Vol. IV, p. 38.

Glyphidodon rapti, Cuv. and Val., Vol. V, p. 456, and Vol. IX, p. 507, Cont., &c., &c.

FAMILY LABRIDAE.

83.—CHŒROPS CYANODON, *Richards.*

Ann. and Mag. Nat. Hist., 1843, Vol. XI, p. 355, and Voy. Ereb. and Terr., Fish., p. 131, pl. 55, f. 5-7; Gunth. Cat. Fish., Vol. IV, p. 96; All. and MacL. Proc. Linn. Soc., N. S. Wales, Vol. I, p. 244.

84.—Chœrops notatus, *All. & MacL.*

Proc. Linn. Soc., N. S. Wales, Vol. I, p. 344, pl. 16, fig. 1.

85.—Chœrops schönhinii, *Blkr.*

Atl. Ichthyol. des Ind. Or. Nederl., p. 163, Labrid. Tab. 46, fig. 1.

86.—Platyglossus Dussumieri.

Cuv. and Val., Vol. XIII, p. 478, pl. 387; Gunth. Cat. Fish., Vol. IV, p. 143.

Halichaeres nigrescens, Bleek. Atl. Ichthyol., p. 118, Tab. 37, fig. 4.

87.—Platyglossus immaculatus, n. sp., Pl. X, fig. 1.

D. 9/12, A. 3/12, L. lat. 26.

My only specimen of this, a clearly undescribed species, is under three inches in length and of a compressed form. The height of the body is one-fourth the entire length, the snout is one diameter of the orbit from the eye, and the mouth is very protractile. The colour seems to be a perfectly uniform yellowish brown, and the fins are without spot or mark of any kind.

Family OPHIDIDAE.

88.—Congrogadus subducens, *Rich.*

Gunth. Cat. Fish., Vol. IV, p. 388.

Machaerium subducens, Richards. Ann. and Mag. Nat. Hist., 1843, Vol. VII, p. 175, pl. 6, and Voy. Ereb. and Terr., Fish., p. 72, pl. 44, figs. 1-6.

Several specimens over a foot in length.

Family PLEURONECTIDAE.

89.—Pseudorhombus Russellii.

Gunth. Cat. Fish., Vol. IV, p. 424; Bleek. Atl. Ichthyol., Vol. VI, p. 9, Tab. 233, fig. 2.

A species of very wide range.

90.—Plagusia guttata, n. sp. Pl. X, fig. 3.

Dorsal rays about 100; no nostril visible; height of body one-fourth of total length; rostral hook extending beyond the lower

eye; three lateral lines on the left side; colour pale brownish yellow, with very many small whitish spots.

Several specimens from 3 to 4 inches long. Probably young.

91.—SYNAPTURA SCLEROLEPIS, N. SP. Pl. X, fig. 4.

D. 88, A. 75.

Pectoral fin minute on the blind side; none on the other; the height of the body is more than one-third of the total length; scales densely cileated and very rough; colour brownish yellow with numerous specks and spots of dark brown.

One specimen 7 inches long.

FAMILY SILURIDÆ.

92.—ARIUS THALASSINUS, *Rupp.*

Gunth. Cat. Fish., Vol. V, p. 139.

Arius nasutus, Cuv. and Val., Vol. XV, p. 60.

Netuma thalassina, Bleek. Atl. Ichth. Silur., p. 28, tab. XIII.

93.—CNIDOGLANIS MEGASTOMA, *Rich.*

Gunth. Cat. Fish., Vol. V, p. 27.

Plotosus megastomus, Richards. Voy. Ereb. and Terr., Fish., p. 31, pl. 21, figs. 1-3.

94.—PLOTOSUS ANGUILLARIS, *Bl.*

Gunth. Cat. Fish., Vol. V, p. 24.

Plotosus lineatus, and *castaneus*, Cuv. and Val., Vol. XV, p. 412 and 421.

Plotosus arab, Bleek. Atl. Ichth. Silur., p. 98, tab. 95, fig. 2.

FAMILY SCOMBRESOCIDÆ.

95.—BELONE MELANOTUS, *Bleek.*

Gunth. Cat. Fish., Vol. VI, p. 238; Bleek. Atl. Ichth. Scombres., p. 47, tab. 10, fig. 2.

96.—BELONE CAUDIMACULATA, *C. & V.*

Cuv. and Val., Vol. XVIII, p. 452; Gunth. Cat. Fish., Vol. VI, p. 245.

Mastacembelus strongylurus, Bleek. Atl. Ichth. Scombres., p. 45, tab. X, fig. 3.

97.—HEMIRHAMPUS AMBLYURUS, *Bleek.*

Gunth. Cat. Fish., Vol. VI, p. 273.

Zenarchopterus amblyurus, Bleek. Atl. Ichth. Scombres., p. 61, tab. IV, fig. 1.

98.—ARRHAMPUS SCLEROLEPIS.

Gunth. Cat. Fish., Vol. VI, p. 277.

Several specimens from 6 to 8 inches in length.

FAMILY CLUPEIDÆ.

99.—CLUPEA TEMBANG, *Bleek.*

Gunth. Cat. Fish., Vol. VII, p. 426.

Clupea gibbosa, Bleek. Atl. Ichth. Clup., p. 106, tab. VIII, fig. 6.

100.—MEGALOPS CYPRINOIDES, *Brouss.*

Gunth. Cat. Fish., Vol. VII, p. 471; Bleek. Atl. Ichth. Clup. p. 87, tab. XII, fig. 4.

FAMILY MURÆNIDÆ.

Of this family there are two species in the collection, one evidently an *Ophicthys*, and the other a *Moringua*. There is but a single specimen of each, and these are so hardened and distorted that I am unable to make out the species.

FAMILY SYGNATHIDÆ

101.—ICHTHYOCAMPUS ANNULATUS, N. SP. Pl. X, fig. 6.

D. 14, osseous rings 16, 29.

Snout four times as long as the diameter of the eye and a little curved downwards; a small occipital ridge, a short opercular ridge; height of body little more than the width and one-fiftieth of the total length; body and tail quadrangular, the angles strongly marked; the lateral line strongly ridged and running into the lower ridge of the tail; a well-marked ventral ridge extending to the vent; pectoral and caudal fins small but distinct; tail nearly twice the length of the body, quadrangular and tapering; the egg pouches on each side of the ventral face of the tail, extend from the vent over about 12 of

the caudal rings, and form 17 divisions; the colour is dark brown or almost black, with a number of more or less distinct whitings rings less numerous than the osseous rings; the fins are spotted. Length about 12 inches.

I have three specimens of this curious little fish; the fully developed egg pouch of the male shows that they have attained their full size.

Family SCLERODERMI.

102.—Monacanthus chinensis, *Bl.*

Gunth. Cat. Fish., Vol. VIII, p. 236; Bleek. Atl. Ichthyol., Vol. V, p. 125, tab. 222, fig. 2.

103.—Ostracion cubicus.

Gunth. Cat. Fish., Vol. VIII, p. 260.

Ostracion tetragonus, Bleek. Atl. Ichth. Ostrac., p. 39, tab. 1, fig. 2, and tab. 3, fig. 2.

Family GYMNODONTES.

104.—Tetrodon virgatus, *Rich.*

Voy. Ereb. and Terr. Fish., p. 62, pl. 39, figs. 8, 9; Gunth. Cat. Fish., Vol. VIII, p. 291.

Crayracion manillensis, Bleek. Atl. Ichth. Gymnod., p. 69, pl. 4, fig. 2.

This species is placed by Dr. Gunther as a variety of *T. immaculata*, Bloch. I believe it to be quite distinct.

105.—Tetrodon patoca, *Ham.*

Gunth. Cat. Fish., Vol. VIII, p. 288.

Leiodon patoca, Bleek. Atl. Ichth. Gymnod., p. 76, tab. 6, fig. 2.

106.—Tetrodon fasciatus, n. sp. Pl. X, fig. 5.

Head and body from the eyes to the pectoral fins broad and flat; the nostrils between and rather in front of the eyes with two openings on each side opposite one another, and in a prominent papilla; from behind the eyes to opposite the middle of the pectorals the flat upper surface is densely covered with small two rooted spines; the ventral surface from the chin to the vent is similarly armed; the sides and back are of a blueish colour, and

the under surface yellow, with a rather sharp line of demarcation; a broad black band extends between the eyes, another broader across the back between the pectorals, a third across the back at the dorsal fin, and a fourth on the back of the tail.

This species judging from the number in the collection, must be very common at Port Darwin. They average about 4 inches in length.

107.—Diodon maculatus, *Lacep.*

Gunth. Cat. Fish., Vol. VIII, p. 307.

Paradiodon novemmaculatus, Bleek. Atl. Ichth. Gymnod., p. 57, tab. 2, fig. 3.

Paradiodon quadrimaculatus, Bleek. Atl. Ichth. Gymnod., p. 58, tab. 8, fig. 2.

Family CARCHARIDÆ.

108.—Carcharias hemiodon, *Müll.*

Gunth. Cat. Fish., Vol. VIII, p. 362.

I have two specimens of what I take to be this shark; a large one with the tips of all the fins quite black, and a small one without any trace of such marking.

Family SCYLLIIDÆ.

109.—Scyllium maculatum, *Bl.*

Gunth. Cat. Fish., Vol. VIII, p. 401.

Family RHINOBATIDÆ.

110.—Rhinobatus granulatus, *Bl.*

Gunth. Cat. Fish., Vol. VIII, p. 443.

A young specimen.

Family TRYGONIDÆ.

111.—Trygon uarnak, *Forsk.*

Gunth. Cat. Fish., Vol. VIII, p. 473.

My only specimen is without any trace of a spine on the tail, and yet in every other respect it answers exactly to the descriptions given of the species.

112.—Trygon pastinaca, *L.*

Gunth. Cat. Fish., Vol. VIII, p. 478.

EXPLANATION OF PLATES.

PLATE VII.

1. *Apogon opercularis, nat. size.*
2. *Diagramma multivittatum, ⅓ nat. size.*
3. *Gerres profundus, ½ nat. size.*

PLATE VIII.

1. *Lethrinus fusciceps, under ½ nat. size.*
2. *Lethrinus punctulatus, ⅓ nat. size.*
3. *Chætodon aureifasciatus, ½ nat. size.*

PLATE IX.

1. *Polynemus cœcus, ⅓ nat. size.*
2. *Gobius maxillaris, nat. size.*
3. *Opisthognathus Darwiniensis, ½ nat. size.*
4. *Salarias Spaldingi, nat. size.*
5. *Apocryptus bivittatus, nat. size.*
6. *Gobiosoma guttulatum, nat. size.*
7. *Eleotris compressus, nat. size.*
8. *Agonostoma Darwiniense, ⅓ nat. size.*

PLATE X.

1. *Platyglossus immaculatus, ⅓ nat. size.*
2. *Dascyllus fasciatus, nat. size.*
3. *Plagusia guttata, nat. size.*
4. *Synaptura selerolepis, ½ nat. size.*
5. *Tetrodon fasciatus, ¼ nat. size.*
6. *Ichthyocampus annulatus, ¾ nat. size.*

Continuation of the MOLLUSCA of the Chevert Expedition, by J. BRAZIER, C.M.Z.S., Corr. Memb. Roy. Soc., Tas.

SUB FAMILY FUSINÆ.

1.—FUSUS PROBOSCIDIFERUS.

Fusus proboscidiferus, Lam. Anim. Sans, Vert., tome 7, p. 126.
„ „ Lam. (Deshayes) edit., vol. 9, p. 447.
„ „ Reeve, Conch. Icon., pl. 4, sp. 15.
„ „ Chenu. Manuel de Conch., p. 139, fig. 596.

Hab. Darnley Island, Torres Straits. Found on the outer reefs, specimen from 18 to 24 inches long.

FAMILY PLEUROTOMIDÆ.

SUB FAMILY PLEUROTOMINÆ.

2.—PLEUROTOMA SPECTABLIS.

Pleurotoma spectablis, Reeve, Conch. Icon., pl. 1, sp. 6.

Hab. Darnley Island, Torres Straits, 20 fathoms, sand.

3.—PLEUROTOMA TIGRINA.

Pleurotoma tigrina, Lam. Anim. Sans, Vert., tome 7, p. 95.
„ *marmorata*, Lam. Encyclop., pl. 439, f. 6.
„ *tigrina*, Reeve, Conch. Icon., pl. 1, sp. 3.

Hab. Princess Charlotte Bay, North East Australia, 14 fathoms; Darnley Island, Torres Straits, 30 fathoms, sand bottom.

4.—PLEUROTOMA CRISPA.

Pleurotoma crispa, Lam. Anim. Sans, Vert., tome 7, p. 95.
„ „ Reeve, Conch. Icon., pl. 2, sp. 11 a, b.

Hab. Darnley Island, Torres Straits, 20 fathoms, sandy mud.

5.—PLEUROTOMA MARMORATA.

Pleurotoma marmorata, Lam. Anim. Sans, Vert., tome 7, p. 95.
„ „ Var. *maculata*, Reeve, Conch. Icon., sp. 21a.

Hab. Darnley Island, Torres Straits, 25 fathoms.

FAMILY TEREBRIDA.

6.—ACUS MUSCARIA.

Terebra muscaria, Lam. Anim. Sans, Vert., tome 7, p. 285.
„ *subulata*, Lam. Encyclop., pl. 402, f. 2a, b.
„ *muscaria*, Sowerby, Thes. Conch., vol. 1, p. 154, pl. 42, fig. 41.

Hab. Darnley Island, Torres Straits. Found on the sands inside the reef.

7.—ACUS SUBULATA.

Buccinum subulatum, Linn. Syst. Nat., edit. 12, p. 1205.

Terebra subulata, Lam. Anim. Sans, Vert., tome 7, p. 242.

„ „ Sowerby, Thes. Conch., vol. 1, p. 156, pl. 41, fig. 16.

Buccinum subulatum, Hanley, Ipsa, Linnæi, Conchylia, p. 259.

Hab. Darnley Island, Torres Straits. Found on the reefs inside the reefs.

FAMILY CERITHIIDÆ.

8.—CERITHIUM (COLINA) COARCTATUM.

Cerithium coarctatum, Sowerby, Thes. Conch., vol. 3, Thes., pl. 290, fig. 321, 322.

Hab. Bet Island, Torres Straits, 11 fathoms, coral and sand, very rare, only one specimen found.

FAMILY CAPULIDÆ.

9.—HIPPONYX BARBATA.

Hipponyx barbata, Sowerby, Proc. Zool. Soc., 1835, p. 5; Thes. Conch., vol. 1, p. 369, pl. 73, fig. 26, 27.

Hab. Cape York, North Australia, 5 fathoms, one dead specimen brought up in the dredge. Anse Vata, near Noumea, New Caledonia. (Brazier.)

Notes and remarks on MOLLUSCA recently found in Port Jackson and New Caledonia, by J. BRAZIER, C.M.Z.S., Corr. Mem. Roy. Soc., Tas.

1.—HALIOTIS PARVA.

Haliotis parva, Linn. Syst. Nat. ed. 12, p. 1256.

„ „ *canaliculata*, Lam. Anim. Sans, Vert, tome 6, second part, p. 217.

Haliotis parva, Reeve, Conch. Icon., pl. 15, fig. 53b.

Padollus canaliculatus, Chenu, Manuel de Conch., part 1, p. 368, fig. 2748, 2749.

Padollus (Sulculus) parvus, Angas. Proc. Zool. Soc., 1865, p. 184.

Hab. "Bottle and Glass Rocks," Port Jackson. Found under a large stone, very rare. (Brazier.) St. Vincent's Gulf, South Australia. (G. F. Angas.)

This fine species I collected some ten years ago, but overlooked it through the dorsal surface being covered with a fine coral-like substance. We have at present in all five species found in New South Wales, these are *Haliotis nævosa*, Martyn. *Haliotis Hargravesi*, Cox. *Brazieri*, Angas; *cocco-radiata*, Reeve; and *parva*, Linn.

2.—Dentalium lubricatum.

Dentalium lubricatum, Sowerby, Junr. Thes. Conch., vol. 3, p. 97; Dentalium, pl. 3, fig. 56.

Hab. Off Port Jackson Heads, 45 fathoms, hard sand bottom. (Brazier.)

This fine shell was obtained when H.M.S.S. Challenger dredged one day off Sydney Heads. Other genera were obtained at the same time, and described by Mr. G. F. Angas, in Proc. Zool. Soc., London, 1877.

3. Broderipia iridescens.

Scutella iridescens, Broderip, Proc. Zool. Soc., 1834, p. 48.

Broderipia iridescens, Sowerby, Thes. Conch., vol. 2, p. 832, pl. 173, fig. 32, 33. Chenu, Manuel de Conch, part 1, p. 364, fig. 2718, 2719.

Hab. Isl. Nou, New Caledonia. (Mr. R. C. Rossiter.) Grimwood's Island, Pacific Ocean. (Cuming.)

The specimen sent by my kinsman from New Caledonia is a most magnificent one; the silvery iridescent nacre which lines the inside of the shell, contrasted as it is with the less brilliant but lively coloured margin, is almost dazzling. The dorsal surface is mottled with white and rose colour. The genus *Broderipia* was established in 1847, by Dr. J. E. Gray, after the late Mr. W. J. Broderip.

4.—Anatina Angasi.

Periploma Angasi, Crosse et Fischer Journal de Conch., 1864, vol. 12, p. 349; 1865, vol. 13, p. 427, pl. 11, fig. 1. *Anatina Angasi*, Angas, Proc. Zool. Soc., 1865, p. 644.

Hab. Off Chowder Bay, Port Jackson, 10 fathoms, mud. (Brazier.) Hardwick Bay, Spencer's Gulf, South Australia. (Angas.) Tasmania. (W. F. Petterd.)

5.—Panopæa australis.

Panopæa Australis, Sowerby, Genera of Shells, pl. 40, fig. 2. Lam. Anim. Sans, Vert. (Deshayes' edit.) tome 6, p. 67. Chenu, Manuel de Conch., part 2, p. 26, fig. 114, 115.

Hab. Near the "Sow and Pigs" bank, Port Jackson. (Brazier.)

This species is very rarely found in a living state. Some three weeks ago, I obtained one while hunting through mud and sand brought up in the Government dredge working on the east side of the bank. The length of the siphon when taken from the sea was 9 inches; when placed in spirits, 6 inches; length of valves, 4 inches; from umbones to margin, 2 inches. I believe that it is the first recorded specimen ever found in New South Wales. I have frequently received dead and worn valves from Mr. W. F. Petterd of Tasmania.

Description of a new species of *Rhipidura*, from Torres Straits? and of a new species of *Eopsaltria*, from the Rockingham Bay district, with remarks on some rare Queensland Birds.

By E. P. Ramsay, F.L.S., &c.

1.—Rhipidura episcopalis, *sp. nov.*

Adult.—Forehead, lores, sides of the head, ear-coverts, throat, sides of the neck and the chest, jet black; crown of the head blackish, becoming olivaceous brown on the back of the head; neck, back, and rump dark brown; a line over the eye from the forehead, a somewhat quadrilateral spot on the sides of the neck

below the ear-coverts, and the breast and upper part of abdomen snow white; the lower chest feathers spotted with white; a narrow line of black feathers surrounds the superciliary stripes; under wing-coverts white; shoulders and upper wing-coverts black, with a roundish white spot at the tip of each of the feathers, wings dark olivaceous brown, becoming blackish on the secondaries; tail black; the ends of all the feathers largely tipped with white; under tail-coverts black, with a faint trace of white on the tip of the greater series; sides of the breast flanks and lower part of the abdomen dark brown; under surface of wing quills brown; bill black above, white below; legs black; bristles black, strong and long, reaching nearly to end of the bill.

Total length, 6·5 inches; wing, 3·1 inches; tail, 3·9 inches; tarsus, 0·85 inch; bill from forehead, 0·7 inch; from gape, 0·8 inch; breadth, 0·35 inch; bristles, 0·6 inch.

This beautiful species was obtained, I believe, on the south coast of New Guinea, or on some of the islands in Torres Straits; it is closely allied to Muscylva (*Rhipidura*) PECTORALIS of Homb. et Jacq. and *R. maculipennis* of G. R. Gray; but it differs from both in having a large white patch on the sides of the neck; and from *R. pectoralis* in being of a much darker hue on the upper parts; the sides, abdomen, and under tail-coverts are not ashy grey as in *R. pectoralis*, nor is there any white stripe on the throat from the angle of the mouth, as is figured in that species; while no mention is made of the white spots on the wing-coverts and shoulders which are conspicuous in the present species *R. episcopalis*. It is quite possible, however, that this may be the fully adult male, and *Muscylva pectoralis* (Homb. et Jacq.) the young or female of the same species; but I know of no instance, where the sexes of birds of this genus so differ in their plumage.

2.—EOPSALTRIA NANA, *sp. nov.*

Eopsaltria capito, Ramsay. List of Australian Birds; P.L.S., N.S.W., II, p. 183, *sp.* 192.

It was this species I alluded to, under the name of *E. capito* of Gould, as coming from Rockingham Bay in the list above quoted. I first noticed it on the Lower Herbert, and afterwards obtained it in the dense scrubs at Dalrymple's gap, about 14 miles from Cardwell; but it was not until Mr. Broadbent had forwarded to me adult specimens, shot from the nest, that I became aware of its being a distinct species; and although very closely allied to *Eopsaltria capito* (*Gould*), of our N. S. W. Brushes, it may at once be distinguished, by the rufous tint on the lores and round the eye.

Adult male.—Head and neck dark brown; ear-coverts and hind neck of the same color, but of a lighter and more ashy tint; lores and ring nearly surrounding the eye, white, the tips of the feathers distinctly tinged with light rufous or rusty red; bristles long, strong and black; throat and upper part of the chest white; back rump and upper tail- and wing-coverts greenish olive; wings and tail brown, margined on the outer webs with olive; breast, abdomen, and remainder of the under surface, and the under tail-coverts yellow, deepest on the abdomen, and tinged with olive on the sides; on the under side of the wing is a white patch at the base of the primaries, and below it a large patch of brown joining the base of the wing quills; the inner webs of the quills towards the base is conspicuously margined with white, which being a little wider on the secondaries forms a triangular patch of the under surface of the wing; the under wing-coverts and axilliaries light yellow; on the upper surface of the wings the narrow olive margin on the outer webs of the quills is somewhat broken about the middle, giving the appearance of a shadowy dark mark across the wing; the outer margin of the tail feathers inclines to olive brown above, the inner below, and the tips of the feathers are more or less narrowly margined with white or very light fulvous. Bill black, feet and legs yellowish flesh color.

The sexes are alike in plumage, but the female has the white of the throat not extending on to the chest, and the bill a trifle smaller.

Total length, 4·45 inches; wing, 2·88 inches; tarsi, 0·78 inch; hind toe (without nail), 0·4 inch; tail, 2·1 inches; bill from the forehead, 0·6 inch; from gape, 0·7 inch; from nostril, 0·35 inch; its breadth at nostril, 0·24 inch; width at gape, 0·4 inch.

The tail in this species is shorter in proportion than that in any other species I have met with, and the wings reach nearly to its tip.

In habits, *E. nana* resembles all others of the genus; building a similar nest and laying eggs closely resembling those of *E. capito*, but smaller. The nest is placed in the fork of a vine or horizontal bough of a tree; and is a remarkably neat structure; one before me is perfectly round, open above, about 1·8 inches inside diameter; 2·8 inches outside; depth inside, 1·4 inches to bottom of nest outside, 1·6 inches to 2·5 inches; it is built in the angle formed by a leaf of a species of *Calamus* and the upright cane, and supported by the branching leaflets or pinnæ; it is composed of rootlets, narrow stripes of withered palm leaves, and skeletons of leaves, &c., and ornamented on the outside with green mosses and scales of the bark of moss grown scrub trees.

The eggs are two to three in number, of a dull greenish yellow, greenish buff, or greenish grey-brown, blotched and spotted with yellowish umber, buff, and reddish-brown, with freckles of a slaty grey tint; the larger spots and blotches forming a zone at the thicker end. Length, 0·85 inch; breadth, 0·56 inch.

Notes on a specimen of *Arses telescopthalmus (Garn.)*, from Cape York ? Arses kaupii *(Gould)*; and the young of *Cracticus quoyi, Less, &c.*

Having recently had an opportunity of examining a fine series of *Arses kaupii*, collected by Mr. Kendall Broadbent, in the scrubs bordering the Barron River at Trinity Bay, I thought a few notes on this hitherto rare species would be acceptable.

I find that the adult males have the chin, throat, upper part of the chest, the nape, back and sides of the neck, pure white; the adult females have a patch on the nape, and back of the neck and the throat white; the sides of the neck being black, not white as in the male; both sexes have a broad black band across the chest, which also extends over the back and shoulders; there is also a small black spot on the chin in some of the females.

The young males, after the first year, attain the plumage of the adult; during the first year the white feathers of the sides and back of the neck and throat are narrowly margined with black; and the feathers of the black chest band are margined with white.

Total length of adult male, 5 inches; wing, 3·1 inches; tail, 3 inches; tarsus, 0·85 inch; bill from forehead, 0·6 inch; from nostril, 0·36 inch; breadth at nostril, 0·2 inch.

Adult female, total length, 5·2 inches; wing, 3·05 inches; tail, 3 inches; tarsus, 0·85 inch; bill from forehead, 0·58 inch; from nostril, 0·31 inch; breadth at nostril, 0·2 inch. Bill, bluish horn color at the base, whitish at the tip; legs, bluish lead color in the young; black in the adult.

I have lately seen in Mr. Macleay's collection a specimen of *Arses telescopthalmus*, said to have been obtained at Cape York by Mr. K. Broadbent during September, 1875; this is a fine male, with the chin black; in some New Guinea specimens the black of the chin is extended on to the throat; in others, it is scarcely noticeable. I believe this is the first instance on record of this species being found on the Australian Continent—and I am glad to be able to add another species to our avifauna.*

I wish to draw attention to a very beautifully *Cracticus*, which I believe to be the young of *Cracticus quoyi*, Less.

The feathers of the head are black centred with light cinnamon brown. The remainder of the upper surface, interscapular region

* Since the above was written I have enquired of Broadbent, who informs me that he has no recollection of having obtained this bird at Cape York; on the other hand, Mr. Masters (Curator of the Macleay Museum) assures me he bought it of Broadbent, at Cape York, with other birds in 1875.

and back is light rufous brown; the feathers margined with black or blackish brown, giving the whole a strongly striated appearance; on the lower part of the back and rump, the markings are not so well defined, and the margins of the feathers are of a dull brownish tint; the upper tail-coverts are more rufous; the median ones somewhat barred, the outer series rufous; tail rufous, washed with brown on the two centre feathers; under tail and wing-coverts, and the bases of the quills rufous or rich cinnamon color; wings above brown, margined with light rufous; the throat, chest, and abdomen, light brown, washed with cinnamon of a rufous tint on the sides of the chest; bill, bluish horn color; iris brown. In size it is about the same of *C. quoyi*. Total length from base of bill, 11·5 inches; wing, 6·8 inches; tail, 5·8 inches; tarsi, 1·7 inches; bill, 2·2 inches; height at nostril, 0·75 inch; width at nostril, 0·45 inch.

The only thing in favor of this bird being a distinct species, is the fact that on six different occasions, some of our best taxidermists have collected during the whole season in districts in which *C. quoyi* is plentiful, without once having met with any bird in a similar stage of plumage.

Notes on the *Australian Cassowary, C. australis (Wall).*

Pl. XI.

Mr. White, of the Reed Beds, Adelaide, while passing through Sydney on his way home, last week, has kindly allowed me to examine some fine adult specimens of the Australian Cassowary which he obtained while collecting at Trinity Bay. Mr. White drew my attention to a marked peculiarity in the shape of the helmet of the males; the hinder part of the top ridge is wrinkled and bent over to the right, as if the growth on the hinder margin had been retarded while that of the front had overgrown, and caused it to be wrinkled and curved. The accompanying plate will show this peculiarity, which Mr. White informs me

he found to be the case with all the males he had seen. When I presented a half-grown bird of this species to the Zoological Society of London in 1874, I offered four more living specimens for sale at cost price, having bought them expressly for the Society. I very much regret that the Society did not see its way to purchase these specimens, as being young, healthy birds, valuable notes might have been made on the growth of the helmets and changes of plumage, had the Society complied with my request. I must say, that I was not a little surprised and disgusted when I ascertained the Society refused to secure them after all the trouble and expense I had been to respecting them; for I now find this fine species is becoming rarer and rarer every day, and will very probably soon be exterminated.

Note on *Carpophaga luctuosa* (*Temm.*)

I take the present opportunity of correcting a mistake made in the number of rectrices of this species given in my paper on the birds collected by the Rev. George Brown in New Ireland and Duke of York Islands.* I find the right number to be 14, and not 12, as there stated. Curiously enough, all our Museum specimens have only twelve, but on closer examination I find one on either side has been lost from every specimen.

EXHIBITS.

By E. P. Ramsay, F.L.S. The birds alluded to in the above paper, and also a fine series of the following scarce species:

Arses (Ophryzone) Kaupii. (*Gould.*) Males, females & young.
Machærirhynchus flaviventer. Males, females & young.
Sittella albata (Ramsay).
Rhipidura episcopalis. Sp. nov.
Eopsaltria nana. Sp. nov.
Pachycephala occidentalis. Sp. nov.

Pardalotus assimilis—pointing out the distinction between this species and *P. afinis* from Tasmania, which is stated was a very rare bird in New South Wales, while the *P. assimilis* arrives to breed in large numbers.

* Proc. L. S., N. S. W., I. p. 373.

Ptilorhis victoriæ. Adult male and female, and several young of both sexes.

Cyclopsitta Macleayana. A large series of both sexes.

Philemon buceroides—remarking that in this species the back and sides of the neck are always naked in the adult, while the feathers on the nape of the neck are reversed, forming a frill or ruffle. These particulars seem to have been overlooked, both in the figuring and describing of this species by Mr. Gould.

By J. Brazier, C.M.Z.S. A complete specimen of *Panopæa Australis*, and the various species referred to in his papers.

ANNUAL GENERAL MEETING.

MONDAY, 28TH JANUARY, 1878.

W. J. STEPHENS, ESQ., M.A., PRESIDENT, in the Chair.

The PRESIDENT delivered the following address :—

GENTLEMEN,—When, at the commencement of the year now elapsed, the members of this Society conferred upon me the distinguished honour of election to the chair of President, it was with much diffidence and hesitation that I brought myself to accept such a position among naturalists of far greater specific knowledge than myself. I considered, however, that any member of such a Society as ours, who is unanimously called upon to hold an office, and who feels himself in any degree reasonably competent to discharge its functions, is bound to submit to the will of the electors, and to accept the tasks and responsibilities imposed upon him thereby. I had further the assurance of assistance from more competent members, which aided in lightening for me the painful sense of insufficiency which I could not but entertain. I hoped also to be able to spare from my necessary business more time for the service of the Society than has eventually proved possible. Upon these grounds, and in all humility, I accepted the position in which your kindness placed me. And it now becomes my duty to follow the precedent set by my predecessor, in laying before you a brief abstract of the operations of this and kindred societies in Australia, together with a summary of such works or papers bearing upon the natural history of the country as have been published in Europe, America, or elsewhere. It is not to be expected that such a list should be exhaustive. It is enough that it should give to students, in search of particular information, a clue which they may follow to the desired source.

The Papers read before this Society during the past year stand as follows :—

1. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
2. Description of a a new *Murex*, collected at Port Darwin, by Mr. Bednall. By John Brazier, C.M.Z.S., &c.
3. The Mammals of the Chevert Expedition, Part I. By E. P. Ramsay, F.L.S., &c.
4. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
5. Description of three new species of Shells from Australia and New Guinea. By John Brazier, C.M.Z.S., &c.
6. On a new species of *Platycercus*, from the interior of New South Wales. By E. P. Ramsay, F.L.S., &c.
7. Description of a new species of *Pelodryas*, from New Ireland. By E. P. Ramsay, F.L.S., &c.
8. Note on a species of *Echidna*, from Port Moresby. By E. P. Ramsay, F.L.S., &c.
9. The Ophidians of the Chevert Expedition. By William Macleay, F.L.S., &c.
10. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
11. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
12. Description of a new species of *Gerygone*. By E. P. Ramsay, F.L.S., &c.
13. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
14. The Lizards of the Chevert Expedition: Part I. By William Macleay, F.L.S., &c.
15. Note on the *Monacanthus Cheverti*. By William Macleay, F.L.S., &c.
16. Remarks on *Poephila Gouldiæ* and *P. mirabilis*. By E. P. Ramsay, F.L.S., &c.
17. On a new species of *Acanthophis* from North Australia. By E. P. Ramsay, F.L.S., &c.

18. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
19. On some Australian species of *Trochocochlea*. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
20. The Lizards of the Chevert Expedition, Part 2. By William Macleay, F.L.S., &c.
21. Description of new species of Birds from New Britain, New Ireland, Duke of York Island, and South East New Guinea. By E. P. Ramsay, F.L.S., &c.
22. On the nests and eggs of some Australian Birds. By E. P. Ramsay, F.L.S., &c.
23. Note on *Brachysoma triste*. By E. P. Ramsay, F.L.S., &c.
24. On *Bruchigavia longirostris*, a new species of Gull from King George's Sound. By George Masters.
25. The *Araneides* of the Chevert Expedition. By H. H. B. Bradley, Esq.
26. Description of two new species of *Helix* from New Guinea and the Louisiade Islands. By John Brazier, C.M.Z.S., &c.
27. On a new species of *Necera*. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
28. On a Tertiary formation at New Guinea. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
29. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
30. The Batrachians of the Chevert Expedition. By William Macleay, F.L.S., &c.
31. Notes on some Birds from Savage Island, Tutuela, &c. By E. P. Ramsay, F.L.S., &c.
32. Continuation of the Mollusca of the Chevert Expedition. By John Brazier, C.M.Z.S., &c.
33. *Echini* of Australia. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
34. Tabular list of the Birds of Australia, &c. By E. P. Ramsay, F.L.S., &c.
35. On some new *Carabidæ* from Port Darwin. By William Macleay, F.L.S., &c.

36. Description of new species of *Ianthænus* from Duke of York Island. By E. P. Ramsay, F.L.S., &c.
37. Notes on a collection of Snakes from Port Darwin. By William Macleay, F.L.S., &c.
38. Description of a new species of *Edoliosoma* from New Ireland. By E. P. Ramsay, F.L.S., &c.
39. Description of a new species of *Pachycephala* from Gulf of Carpentaria. By E. P. Ramsay, F.L.S., &c.
40. On a variety of *Trigonia Lamarckii*. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
41. New or little known Australian Fishes. By Count F. de Castelnau.
42. On some Australian Shells described by Dr. A. Gould of America; and on some new Marine Shells, dredged off Port Jackson by Mr. Brazier. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
43. On New Guinea Fossils of the Chevert Expedition. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
44. On some Birds from Port Darwin. By George Masters.
45. On the Tropical Vegetation of Queensland. By Mr. F. M., Bailey, Corresponding member of the Society.
46. On some new species of Birds from the New Hebrides. By E. P. Ramsay, F.L.S., &c.
47. On some new South Australian Helices. By Professor R. Tate, South Australia.
48. On the recent and fossil Corals of the Australian Seas. By the Rev. J. E. Tenison-Woods, F.G.S., &c.
49. On a collection of Fish from Port Darwin. By William Macleay, F.L.S., &c.
50. Continuation of the Mollusca of the Chevert Expedition; By John Brazier, C.M.Z.S., &c.
51. Notes on Mollusca recently found in Port Jackson and New Caledonia. By John Brazier, C.M.Z.S., &c.
52. Description of new Birds. By E. P. Ramsay, F.L.S.

The following papers have been contributed to the ROYAL SOCIETY, N.S.W., during the past year. They are placed in the order in which they were read:—

1. On the sphenoid cranial bones, operculum, and supposed ear bones of *Ctenodus*. By W. J. Barkas, M.R.C.S.
2. On the scapula, coracoid, ribs, and scales of *Ctenodus*. By the same author.
3. On *Dromornis Australis*, a new fossil gigantic bird of Australia. By the Rev. W. B. Clarke, F.R.S., F.R.G.S., &c.
4. On the Liernur Sewerage system, and its application to hospitals and towns. By Alfred Roberts, M.R.C.S.
5. On Australian Tertiary Geology. By the Rev. J. E. Tenison-Woods, F.G.S., F.R.G.S., &c.
6. On some new species of *Polyzoa*. By the same author.
7. On the occurrence of true Chalk in the Pacific Islands. By Professor Liversidge, F.C.S., F.G.S., &c.
8. On a new method of extracting gold, silver, and other metals from Pyrites. By W. A. Dixon, F.C.S.
9. The palæontological evidence of Australian Tertiary formations. By the Rev. J. E. Tenison-Woods, F.G.S., F.R.G.S., &c.
10. A synopsis of Australian Tertiary Fossils. By R. Etheridge, jun., F.G.S.
11. *Ctenacanthus*, a spine of *Hybodus*. By W. J. Barkas, M.R.C.S.
12. A system of Notation adapted to explaining to students certain electrical operations. By Hon. J. Smith, C.M.G., M.D., LL.D., &c.
13. Guano and other Phosphate deposits, Maldon Island. By W. A. Dixon, F.C.S.
14. Notes on the meteorology, natural history, &c., of a Guano Island. By the same Author.
15. Australian Tertiary Corals. By the Rev. J. E. Tenison-Woods, F.G.S., F.R.G.S., &c.
16. Some notes on the recent opposition of the planet Mars. By H. C. Russell, B.A., F.R.A.S.

17. A new and remarkable variable Star, in the constellation *Ara*. By John Tebbutt, F.R.A.S.
18. A dental peculiarity of the *Lepidosteidæ*. By W. J. Barkas, M.R.C.S.
19. Notice of a new fossil extinct species of Kangaroo, *Sthenurus minor* (Owen). By the Rev. W. B. Clarke, M.A., F.R.S., F.R.G.S., &c.
20. Notes on the recent Barometrical disturbances. By H. C. Russell, B.A., F.R.A.S.

In the President's address to the members of the MICROSCOPICAL SOCIETY OF VICTORIA, I observe a notice of the large species of *Vallisneria*, common in our waters, and highly advantageous for microscopical observation. This plant was collected and cultivated many years ago for the same purpose by Mr. Alfred Roberts, M.R.C.S., in Sydney.

A paper on Microscopical Rock Sections was contributed to the same society by A. W. Howitt, Esq., of Gippsland. One on Iron in Vegetable Tissues, by the President (Dr. Ralph). On Desmids and Confervoids, by C. W. Mapleston, Esq., of Tarnagalla. On Infusoria, Rotatoria, and Entomostraca, by the same author. The President drew attention to the best methods of working with the microscope, and the preliminary knowledge requisite to make the use of that instrument both interesting and useful.

The papers read before the ROYAL SOCIETY OF VICTORIA are chiefly, as usual, upon Astronomy and Physics. But the Rev. J. E. Tenison-Woods supplied an account of various new marine Mollusca, and Mr. Etheridge an article upon Palæozoic Actinology in Australia.

The following Papers, more or less bearing upon the Natural History of Australia, have appeared in the Proceedings of various learned Societies, viz. :—

THE LINNEAN SOCIETY, LONDON.

Mr. R. Bowdler Sharpe on the Birds of New Guinea, collected by Dr. James. Part 2.

On a new Australian Crustacean, *Actæomorpha erosa*. By Mr. E. J. Miers.

Description of Genera and Species of Australian Phytophagous Beetles. By Dr. Joseph S. Baly.

Contributions to the Ornithology of New Guinea. Part 3. By Mr. R. Bowdler Sharpe.

THE ZOOLOGICAL SOCIETY, LONDON.

Remarks on a collection of Mammals, Birds and Insects, found by the Rev. George Brown, C.M.Z.S., in Duke of York Island. By Mr. Sclater.

Description of a new *Helix*, from South Australia. By George French Angas, F.L.S.

On the Birds of New Ireland, New Britain, and Duke of York Island. By P. L. Sclater, M.A., F.R.S., &c.

On a collection of *Cheiroptera*, from New Ireland, New Britain, and Duke of York Island. By G. E. Dobson, M.A., F.L.S., &c.

On the Rodents and Marsupials of New Ireland, New Britain, and Duke of York Island. By Edward R. Alston, F.L.S., F.Z.S., &c.

On a collection of Reptiles and Fishes from New Ireland, New Britain, and Duke of York Island. By Dr. Albert Günther, V.P.Z.S.

On the *Crustacea* of Duke of York Island. By Edward J. Miers, F.L.S., F.Z.S., &c.

On the *Echinodermata* of Duke of York Island. By Edgar A. Smith, F.Z.S.

On some *Lepidoptera*, from Duke of York Island and its neighbourhood. By Robert Salvin, F.R.S., and F. Ducane Godman.

On the *Coleoptera* of New Ireland, New Britain, and Duke of York Island. By H. W. Bates, F.Z.S.

THE ENTOMOLOGICAL SOCIETY, LONDON.

Descriptions of twenty new Species of *Coleoptera*, from various localities. By Charles O. Waterhouse.

Descriptions of new Genera and Species of Phytophagous Beetles, of the family *Cryptocephalidæ*, with diagnosis and remarks on previously described Genera. By Joseph S. Baly, F.L.S., &c.

Monograph of the Australian Species of the Coleopterous family *Lycidæ*. By C. O. Waterhouse.

THE GEOLOGICAL SOCIETY, LONDON.

On new Species of Belemnites and Salenia, from the middle Tertiaries of S. Australia. By Ralph Tate, F.G.S.

In the ANNALS AND MAGAZINE OF NATURAL HISTORY we note the following Papers relating to Australasia :—

On some new Genera and Species of *Araneidea*, by the Rev. O. P. Cambridge, M.A., C.M.Z.S., &c.

Mr. H. N. Mosely on *Peripatus Novæ Zealandiæ*, of Captain Hutton, Otago Museum.

Description of new Genera and Species of New Zealand *Coleoptera*. Part IV. By Francis P. Pascoe, F.L.S., &c.

On a new Species of *Naultinus*, described by Dr. Buller, C.M.G., President of the Wellington Philosophical Society, New Zealand.

Additions to the Coleopterous Fauna of Tasmania. By Charles O. Waterhouse.

Description of a new form of *Ophiurid*, from New Zealand. By Edgar A. Smith, F.Z.S., Zoological department, British Museum.

Notes on New Zealand Ichthyology. By James Hector, F.R.S., C.M.Z.S., &c.

Revision of the Lepidopterous genus, *Clio*. By Arthur G. Butler, F.L.S., &c.

On the *Elateridæ* of New Zealand, Part 1. By D. Sharp.

Description of three new species of Lizards, from the Islands of Torres Straits. By Dr. A. Günther.

Notes on Stony Corals in the British Museum. By. Dr. F. Brüggeman.

New Coleopterous Insects from Queensland. By Charles O. Waterhouse.

Description of some African and Australian *Lepidoptera* in the British Museum. By Arthur G. Butler, F.L.S., F.Z.S., &c.

On the *Elateridæ* of New Zealand, Part 2. By D. Sharp.

On a small collection of Orthopterous Insects of the families *Phasmidæ* and *Mantidæ* from Australia and New Britain. By Professor J. Wood-Mason, Deputy Superintendent, Indian Museum, Calcutta.

Description of new species of New Zealand *Myriapoda*. By Captain F. W. Hutton, Professor of Natural Science, Otago University.

Characters of new genera and species of Phytophagous Beetles. By Joseph S. Baly, F.L.S.

In the JOURNAL DES MUSEUMS GODEFFROI, Dr. Günther continues his description of South Sea Fishes, and there are also contained in No. 12 :

1. Paper on new Birds from Fiji, Samoa, &c. By Otto Finsch.

2. On a new species of Branchipus from Peak Downs. By Dr. F. Richters.

3. Description of new species of Reptiles from Australia. By Dr. A. Günther.

4. On the Australian *Paussidæ*. By Dr. C. A. Dohrn.

5. On the Australian *Formicidæ*. By Dr. Gustav Mayr.

6. A notice on Polynesian Craniology. By Dr. J. W. Sprengel.

In the BULLETIN DE MOSCOU, Baron de Chaudoir, in a memoir upon the *Truncatipennes*, describes several Australian species; while in the ANNALI DEL MUSEO CIVICO, Dr. R. Gestro, of Genoa, continues his description of the *Coleoptera*, collected by Signor d'Albertis in New Guinea and North Australia.

The FOSSIL MAMMALS OF AUSTRALIA, by Professor Owen, will undoubtedly prove a work of incalculable value and interest to Australian Zoologists. And the same high authority is about to publish a work upon the EXTINCT WINGLESS BIRDS OF NEW ZEALAND, which will present the student with all that is at present ascertained upon the subject.

The description by Professor L. G. DE KONINCK of a large collection of Palæozoic fossils, forwarded to him for that purpose by our venerable and distinguished fellow-colonist, the Rev. W. B. Clarke, has resulted in the full corroboration of the views which he has so long and so stoutly maintained against adverse opinion.

The third part of the AUSTRALIAN ORCHIDS, by Mr. Fitzgerald, has now been issued from the Government Printing Office, and fully supports the reputation earned by the preceding numbers. It is a subject for congratulation that the description of these fleshy and perishable organisms should have been commenced in the country where alone they can be profitably examined. And it is to be hoped that the undertaking will ultimately lead to the accomplishment of a Monograph dealing with the whole subject. Mr. Bentham himself feels the difficulty of dealing properly with the Orchids from examination of dried specimens only, and sees that the work must be done upon the spot.

The seventh volume of the FLORA AUSTRALIENSIS (being in the press) is not as yet accessible to the Australian public. I am enabled, however, by the kind assistance of Dr. Woolls, who has had the privilege of reading the sheets as issued, to inform the Society that, in this volume, the following orders are (among others) described, viz. :—*Liliaceæ*, *Juncaceæ*, *Commelyneæ*, *Zosteraceæ*, *Naiadaceæ*, *Palmaceæ*, *Pandaneæ*, *Araceæ*, *Typhaceæ*, *Eriocaulaceæ*, *Restiaceæ* and *Cyperaceæ*. The whole work, useful and comprehensive as it undoubtedly is, suffers from the circumstances under which it has been composed. No amount of knowledge, acuteness, or ingenuity will altogether obviate the disadvantages under which the botanist who describes from dried specimens only must inevitably labour. And though the assistance of Baron von Müller and others have placed Mr. Bentham in a far better position for the work than he could otherwise have obtained, it remains evident that much has to be done by botanists resident in the country, in order to complete this account of the Australian flora. The genus *Eucalyptus* (Vol. 3), and the *Orchidaceæ* (Vol. 6) are allowed by Mr. Bentham him-

self to be still in a very unsatisfactory condition. And I am informed by Dr. Woolls that no *Zostera* is recorded from New South Wales, though our bays and saltwater rivers abound in (at least) two genera. Several other aquatic and marsh plants are noted from Victoria and Queensland without reference to the intervening district in which they are equally common. It will be, however, a comparatively easy task to correct and supplement the work. The principal portion of the labour is effectually done, and the details may now be left to inferior hands.

The tenth volume of Baron von Müller's FRAGMENTA PHYTOGRAPHIÆ AUSTRALIÆ is nearly complete. Most of the matter contained in the preceding parts has been incorporated with the descriptions given in the Flora Australiensis; but the present volume contains, in addition to a vast amount of information respecting the geographical distribution of plants, descriptions of many new and interesting species of the following genera, viz. :— *Eucalyptus*, *Swainsonia*, *Cassia*, *Goodenia*, *Prostanthera*, *Wehlia*, *Acacia*, *Calandrinia*, *Helipterum*, &c. The author has been exposed to much foolish ridicule on the ground that his work is in Latin. But it may be safely asserted that the Fragmenta have done more to make Australian plants known throughout continental Europe than any work which has appeared since the days of R. Brown.

In the middle of last year a pamphlet of 48 pp. was published on "Timbers of Victoria,"—being a descriptive catalogue of the specimens in the Industrial and Technological Museum of Melbourne, revised by Baron von Müller. This little book contains much useful information, but must be regarded as only an instalment.

In 1874, a volume was published by the same author, under the direction of the Geological Survey of Victoria, entitled "Observations on the Vegetable Fossils of the Auriferous Drifts." The work has been continued from time to time as fresh discoveries have occurred, throwing much light upon the tertiary flora of this country. The last plate (No. 13), published in 1877, is that of *Wilkinsonia bilaminata*, which may have been the fruit of some species of *Sapindaceæ*.

The same author has, during last year, commenced a series of lithographic illustrations of the genus *Eucalyptus*. Ten of these have already appeared, of species from all parts of Australia, and clearly figuring the flowers, seed vessels, seeds, &c. of forms described in the Flora Australiensis and Fragments. This work will, when completed, have done much to clear up the mystery which surrounds the genus, and set before the world the true character of its component species—a task which the "Flora" cannot be said to have achieved.

We cannot omit reference to a lecture delivered by the Baron in the Presbyterian Church of West Melbourne in August last, in which he earnestly advocates the advancement of the Natural Sciences through the aid of Ministers of the Christian Church. The lecture contains a synopsis of the growth of Natural Science, which cannot but be interesting to all.

The same author has also published a SCHOOL BOTANY for Australia, which, though a valuable work and excellently illustrated, is of too technical a character for the particular service for which it is intended.

A work has been lately published in San Francisco upon "Forest Culture and Eucalyptus Trees," which shows the importance attached in California to the cultivation of those trees which Australians are too carelessly destroying in their original habitats.

In New Zealand, where the national importance of Natural Science is better understood than in the Australian Colonies, the 9th, 10th, and 11th Reports of Geological Explorations during the years 1874-1877 have been recently published. They contain a vast amount of exact information, which may become of very great importance in the determination of the isochronism, as yet little known, of the Australasian formations.

The attention of the Scientific world has now for several years been almost absorbed in subjects in which demonstration is probably impossible, and of which the discussion has as yet produced more excitement than conviction. There is certainly manifest among scientific men a degree of violence in argument, and an

impatience of opposition, which was not common twenty years ago, and which is mainly due to the discussion of such subjects as those to which I refer. And though hard words are said to break no bones, they may nevertheless cause serious internal injury to science. The 'dry light' by which we ought to work is apt to be so tinged by the fire of passion and self-assertion, kindled in these encounters, that no object can be viewed in its true colour or proportion. This polemical spirit, however, has at least effected a great concentration of observation and thought upon the important and allied branches of Embryology and Palæontology. What the precise nature of their alliance may be we have at present no positive grounds to determine; but that there is some connection between the two sets of phenomena thus investigated is certain. It is to be observed that the gaps in the geological record, which are plausibly accounted for, are balanced by leaps in the developement of the individual organism, of which no explanation, as far as I am aware, has as yet been attempted. Continuity of Creation in some way or other seems to be clearly indicated. But the exact mode of operation is invisible, and, as I believe, inconceivable. The theory of Evolution by Mechanical or Chemical causes only, advocated so hotly, and, I must say, so intemperately, by Haeckel, is quite distinct from the far more cautious and limited propositions of Darwin; but there are not wanting signs that Haeckelism is already beginning to devour its own parent. At least one observes that the language and tone of the former author are far more generally imitated, especially by those persons who style themselves *Scientists*, than the dispassionate and laborious logic of his master.

Closely allied to these inquiries is the question of Spontaneous Generation. The burden of proof here evidently lies upon the shoulders of those who maintain this hypothesis, inasmuch as all experiment, as well as all experience, tends to support, with daily increasing energy and weight, the now venerable maxim "*Omne vivum ex vivo.* Few besides fanatical evolutionists will venture to join Haeckel in his assertion that the other supposition of Autogeny, as he calls it, must of necessity be regarded as true,

even though it be not proved (nay, even if it be confessedly incapable of proof,) because, if it be not received, we shall be obliged to admit, though, indeed, only for a single stage of the process of world-formation, the otherwise gratuitous and quite unscientific hypothesis of the intervention of a Creator. Still in the same obscure ground, where our observation, through the imperfection of our senses and instruments, becomes less and less certain as enquiry proceeds, we find the Germ theory of disease confronted by a counter hypothesis of Glandular poison. Few besides the actual combatants will take a positive side in the dispute. I would only remark that the first hypothesis allies itself at once with that knowledge which we do possess of the lower forms of animal and vegetable life, while the latter enters upon a field of quite unknown material. But it may well be doubted whether any kind of positive demonstration is possible; and, if it were, whether any practical result would follow. The phenomena of disease will remain the same, and the methods of defence will continue to be studied, as now, irrespective of hypothesis such as for many centuries enabled physicians to kill *secundum artem*, and with impunity.

As the object of our Society is not only the advancement, but also the diffusion of scientific observation of nature; and as the improvement of any art or science varies directly with the number of intelligent persons engaged therein, I have thought that I may be pardoned for drawing the attention of the Society, on the present occasion, to a branch of our subject, which, though very humble, has a special interest for myself, and will be admitted to be of great, if not of national importance. We aim, as a matter of course, not only for ourselves, but for society in general, at the cultivation of habits of accurate observation of phenomena, and their rational classification according to generic or common relations on the one hand, and particular or specific differences on the other. We desire to establish legitimate induction in the place of rash speculation, careful generalization instead of reckless hypothesis; and, in short, to see humanity somewhat more free than at present from dangerous ignorance,

stupid indifference, or overweening self-confidence, from boundless scepticism and unlimited credulity in every portion of the domain of human knowledge. I am almost ashamed to repeat the trite remark that those sciences which are capable of mathematical demonstration or direct experimental proof, leaving as they do no room in their propositions for doubt or contradiction, fail to develope the judicial faculty of the intellect, while the higher or more abstruse questions of philosophy, theological, moral, or metaphysical, are so far beyond the reach of ordinary understandings, that their very difficulty causes them to be handled with the perilous audacity of the ignorant. The study of natural science, therefore, standing by virtue of its subject and its method midway between these two extremes, seems especially indicated as the remedy for these intellectual diseases. And, in order to obtain its continuous exercise, we must begin with the young, whose curiosity is lively, eyesight keen, and memory tenacious, and whose zest in the contemplation of the wonders of creation has not been dulled by years of alienation from all mental exertion which does not promise a tangible reward. And that such training may be as wide as the evil which it is especially calculated to counteract, we must lay its foundation in the common or primary schools of the country. It must not be confined to any class or portion of the community, but be freely open to all. The poor are as capable of this study as the wealthy. A host of examples might even be alleged to prove them more so.

Many attempts have been made, with more good will than success, to introduce Natural History as a staple subject in many of the higher English schools. The causes of this failure, though well worthy of consideration, are for the most part outside our present inquiry, which is to determine the method by which Natural History may be made an integral portion of the *general* training of the young. One cause, however, is the same everywhere, and must not be overlooked. It is rare to find among teachers, however skilful in other respects, an intimate acquaintance with natural science; while the persons duly qualified by knowledge have seldom the patience or the practice requisite for effectual

teaching of the young. They have not gained by long and painful experience that faculty of gauging inattention and forgetfulness without which nothing can be sufficiently taught to the majority. Even where they win a temporary attention they will find that the memory as easily loses its impressions as it seems to receive them. Their methods are moreover abstract and scientific, not homely, practical, and elementary. The teaching of Natural Science in short, like that of reading, writing, and arithmetic, ought to be in the hands of the common schoolmaster, as the person best trained in the communication of elementary knowledge. But he is for the most part either quite ignorant of the subject, or has only book knowledge, which though interesting to the individual, is useless for the teacher's purpose. The remedy must be gradual, but may be much expedited by the establishment of a definite method, with suitable hand-books for teachers, by which they may improve their own powers without detriment to their pupils. Mere lecturing is utterly useless, and learning by heart from manuals no more profitable, though much more laborious. Up to the age of ten, the pupil should only be instructed by pictures and stories in the external forms, names, habits, and geographical distribution of animals and plants, in the manner now commonly adopted There should be no tasking of the memory, and no attempt at scientific teaching. All that can be reasonably desired is that the children of the primary school should have, at ten, as general an acquaintance with "birds and beasts and fishes" as all of us obtained in the nursery by the aid of toys, picture-books, and pets. Objective scientific teaching should then commence and continue, under the limitations to be hereafter mentioned, to the age of fourteen, when elementary education may be considered to be complete, and higher cultivation to begin. It is for these four years only that adequate primers are required. There is an abundance of books fit for the lower, and many suitable for the higher course, but none, so far as I am aware, for the important period now under consideration. The essential basis is that the earning should be from the thing itself, and not from a book

about it, and that neither classification nor physiology shall be touched upon, except so far as the senses of the pupil can, without artificial assistance, check or corroborate the words of the teacher. It is not, of course, meant to exclude from any portion of the school course readings or lessons about natural objects. Stories of lions and tigers, and the like, are capital reading, being both intelligible and interesting. But they afford no scientific culture.

A sufficient hand-book of Botany might perhaps be drawn up on the following principles:—The plants, indigenous or introduced, which are most generally distributed over New South Wales, and are most prominently notable for size, beauty, economic value, poisonous or medicinal properties, oddity of appearance, or other peculiarity, should alone be admitted. Those selected should be described with the utmost possible preciseness and accuracy, but in the vernacular and not the botanical dialect, except where the technical term is absolutely necessary. Thus we should not speak of racemes, corymbs, panicles, or cymes; still less should we use such terms as monochlamydeous, monocotyledonous, diœceous, hermaphrodite, or hypogynous. But we should adopt, of necessity, the words calyx, corolla, stamen, anther, and the like. No lesson should ever be given without a specimen before the eyes of the class, or immediately accessible, and consequently no systematic order of lessons is possible, but each must occupy a separate and independent position It will often be necessary, for want of specific knowledge, that the teacher should take generic forms, as in the case of *Eucalyptus*, *Acacia*, *Casuarina*, Orders, as in Seaweeds and Mosses, or even Alliances, as in the *Fungi*. But, whenever possible, a single, true, well-known, and easily recognised species (*e.g.*, *Passiflora edulis*), should be selected as the subject. In the plants which have varied to a large extent under cultivation (*e. g.*, *Brassica oleracea*), attention should be drawn to as many different, but familiar, forms as possible. The selected plants would be somewhat as follows:—Maize, wheat, barley, and oats, millet, &c., to represent the Grasses; the potato, tobacco, and tomato for the *Solanaceæ*; the apple, pear, or quince for the *Pomeæ*; and the apricot, plum,

cherry, peach, or almond for the Drupaceous family. The *Cucurbitaceæ*, *Cruciferæ*, *Vitaceæ*, *Compositæ*, *Umbelliferæ*, *Moraceæ*, *Labiatæ*, *Leguminosæ* are easily illustrated by cultivated examples in almost all parts of the colony; while Palms, *Musaceæ*, *Aurantiaceæ*, are common in the coast districts only, and must, therefore, be omitted in the inland schools. The Myrtles, Proteads, Acacias, and Loranths are to be found everywhere. It is hardly necessary to repeat that these are not to be all studied throughout. The Handbook would only direct the teacher in the particular opportunity which presents itself. Possibly half-a-dozen groups would be enough in any one school, differing in arrangement according to the climate and soil of the neighbourhood. The groups, though numbered for the purpose of reference, would have no necessary connection or order.

There is fortunately little difficulty for Australians in the nomenclature of immigrant plants. Such names as Bathurst Burr, being only used for the same species, although involving a mistake, do not cause confusion; while the plants which have been purposely introduced have naturally arrived under their own proper names. But the bewilderment caused in the learner's mind by the use of such terms as Gum tree for *Eucalyptus*, Turpentine for *Syncarpia*, Apple tree for *Angophora*, Oak for *Casuarina*, Tea tree for various genera of *Myrtaceæ*, and twenty other misnomers, is a more serious matter, and can only be met by a resolute insistance upon the technical, or still better, the aboriginal names. Thus Waratah has fortunately superseded the earlier "Tulip" or "Dahlia"; and the prefix "native" may be understood to warn the hearer that the plant does not belong to the family of its name. Thus, the native Rose is a *Boronia*, the native Fuschia sometimes an Epacrid, sometimes a *Boronia*, or *Correa*, sometimes a *Blandfordia*; the native Snowdrop a *Lotus*, and the native Hop a *Dodonæa*. I have dealt with considerable length upon the Botanical Primer, because the materials for its construction are ready at hand, requiring only selection and adaptation to fit them for their proper position in the edifice.

In like manner the Mammals, Birds and Reptiles of Australia, have been pretty thoroughly worked out, and offer no serious

difficulty to the editor. The Zoological Primer would comprehend (of the mammals) the genera Man, Dog and Cat, Hog, Ox and Sheep, Horse, Rat, and Rabbit. Of these the dentition and osteology may be generally demonstrated under the names used in human anatomy, may be readily verified by the pupil, and when once learned will be retained in the memory by continuous observation. The indigenous fauna may be studied as specimens present themselves, under five groups. 1. The Kangaroos, including the wallaby and rat kangaroo. 2. The Phalangers, including the 'possum, native bear, and flying squirrel. 3. The Peramelidæ (bandicoot, &c.) 4. The Dasyuridæ (native cats). 5. The Platypus and Echidna. As in the botanical register, the names of domestic animals, being foreign to the soil, are correct. Many Marsupials, on the contrary, having received their names from persons of excessive ignorance, are known by most misleading appellations. Not to speak of native Cat, native Bear, &c., which may be excused on the same plea as native Rose, we have 'Possum for Phalanger, Tiger Cat for Dasyure, Bandicoot for *Perameles*, Flying Squirrel for *Petaurus*, Water-Mole for *Platypus*, and Porcupine or Hedge Hog for *Echidna*. The last four misnomers may be extirpated; the others must, I fear, be tolerated.

The Birds, Reptiles, and Batrachians present in this respect no difficulty of importance, although we have Turkeys, Curlews, Woodpeckers, &c., in the wrong places, and dignify a harmless Gecko with the appalling title of Rock-scorpion. Selecting as before the most familiar types for specimens, we should note among the Birds, first—Barn-door Fowls, Geese and Ducks, Pigeons, Parrots, and Cockatoos. By use of these all the elementary principles of Ornithology may be established, nothing, as before, being taught which is not capable of verification to the naked eye. Next some of the wild birds, as Crows, Hawks, Laughing-jackass, Mopork, as being common and conspicuous. The Emu and Bustard may be added, chiefly on account of their size. But no more should be attempted.

The Reptiles offer considerable practical difficulties in the way of demonstration; so that lessons should perhaps be confined to the Fresh-water Tortoise, the Black Snake, Carpet or Diamond Snake, and the so-called Iguana or Gohanner.

The metamorphosis of the Batrachians can be illustrated by examples of any species.

As almost all our larger Fishes are popularly known by most erroneous names, and the same fish may have as many aliases as it has habitats, while the same name is applied to different fish in different waters, there is urgent need for an attempt, at least, to overcome this enormous confusion. In the meantime we may select two well-known species for illustration —the Snapper for the coast districts, and the Murray Cod for the interior. Examples may also be obtained to illustrate the Mullets, Eels, Scombers, Herrings, Sharks, and Rays. But the careful study of some few forms must suffice for the present. In the Annulose sub-kingdom, the Crustaceans would be illustrated by the (so called) Lobster of the coast, and the Miami of the interior. But any good-sized Crab might be used in the object lesson. The Barnacles, Entomostraca, &c., would have to be passed over, as creatures whose true structure and relationship are outside the sphere of common observation.

The Insecta furnish an abundant store of specimens in all parts of Australia, and of all families. They are readily preserved, and are, in all respects, except that of size, especially suitable for our purpose. Among the Coleoptera, I should propose as objects any large examples of the Carabidæ, Lamellicorns, Buprestids, and Curculios. Distinctions of family alone should be observed, but the general coleopterous conformation precisely and carefully studied, so far as is possible without adventitious aid. The common Bee, the Blowfly, any large Moth or Butterfly, any large Cicada, the common Cockroach, any Grasshopper or Dragonfly will afford the means of identification of their respective orders.

The Myriapoda and Spiders seem beyond the grasp of our method, as also the Echinodermata and Hydrozoa.

The Mollusca must only be represented by any available Cephalopod, any Helix, any marine Gasteropod, and any Conchifer, the

investigation of internal structure being contrary to our method. It is of little consequence what and how many of these selected forms shall have been gone through by the conclusion of the four years. The more, perhaps, the better; but the main point is that whatever has been studied has been learnt thoroughly and accurately. Not indeed technically, nor systematically; but still in the proper sense of the word, scientifically. The pupil is therefore well prepared to prosecute a regular course of botanical and zoological research with all the aid that books, instruments, and lectures can afford And whether he formally continues his studies or not, he can never altogether lose the advantage of the training both of sense and intellect which this elementary process had given him. No portion of the present common school education is an adequate substitute for this; and none, except reading, writing, and arithmetic, which are retained by continual and necessary exercise, has any chance of being borne in the memory as an available possession of the mind. What becomes of the smattering of geography, history, Euclid, and perhaps a little Latin, which the diligent pupil carries away with him at the end of his course? Why, in five years' time there is hardly a shred left. The training undergone in these studies is no doubt still effective, but not in a lively or vigorous manner, because there is little or no opportunity for the daily renewal of their impressions. I have thrown these few observations together to indicate a practicable mode of introducing scientific study into the schools of the country, partly because there is apparently a strong and increasing feeling of its desirability, accompanied by a complete misunderstanding of the conditions under which it is possible. Physiology, as I have said above, cannot be studied in schools. It is certainly capable of being 'crammed,' but to no useful purpose. The "laws of health," if the phrase be allowable, may very well be learnt by heart without any knowledge of their grounds, and with much permanent advantage to the learner. But physiology – *i.e.*, the investigation of the origin, microscopical structure, functions, and relations of the various component parts of an organised body—is a distinctly professional study, a

smattering of which is of no educational use whatever, though it may be interesting and in a way instructive to the cursory reader. How any sane person could ever have dreamt of attempting to train mere children by such means I cannot understand. Chemistry is little better. To learn chemistry (as they phrase it) from book is less improving than to commit to memory the ballad of John Gilpin. To study it experimentally, except so far as the daily experience of combustion, &c., serves for illustration, is impracticable. Natural science alone offers the desired opening, and for this the method has still to be developed. It may be observed that I have omitted all reference to Geology, which is a branch of natural history often attempted in primary education, and, of course, attempted in vain, because taught from books. A boy or girl may well learn by the age of fourteen to distinguish between sedimentary and igneous rocks, between calcareous, silicious, and aluminous minerals. But this is so small a matter that I did not think it worth mentioning in its proper place, and only allude to the subject now, to emphasise my protest against Book-learning in Elementary Science. Nothing should be studied second-hand, that is to say, from the observations of another, which is capable in any way of being brought under the direct observation of the learner. The value of literary training, which depends entirely upon books, is quite beside the question. It is a branch of education which scientific men are rather apt to underrate, in return perhaps for the contemptuous attitude maintained by the learned towards them. But it is to the loss of both parties, and of the world in general, that such mutual dislike should be perpetuated. And the Philistines on both sides ought to be made to feel that they concentrate upon themselves the united hostility of all who desire to see the even and harmonious developement of every human faculty. It is certain, from our experience of the *scientists*, that science, by itself, is insufficient as a means of higher culture, while literature, even in its ancient and laudable association with mathematics, is imperfect as a true means of education. It must be now-a-days supplemented by some science of observation, or it will fall into most undeserved and undesirable contempt.

I think I am right in saying that when this Society was first designed it was intended to form a sort of Club for mutual assistance in the observation of the phenomena of Nature, as well as a means of printing and publishing original researches. It seems to me that this purpose has been somewhat lost sight of, and that it would be to the advantage of members, each and all, if expeditions with the distinct object of study were, once a month or so, made into the neighbouring country, collections formed, and the results reported, exhibited, or discussed at the next monthly meeting. There is a danger that the detachment might convert itself into a mere party of pleasure for the purpose of fishing and feasting. This peril may be met by the establishment of strict sumptuary laws, which should hold for all the regular meets. Off-days should be free of all restriction. I have detained you, gentlemen, longer than I had intended, and conclude with the expression of my obligations to Mr. Macleay and Dr. Woolls for their assistance in bringing together the information which I have been, by their help, enabled to lay before you.

On the motion of Dr. FORREST it was resolved—"That the President's Address be printed with the Proceedings."

The Treasurer presented his Accounts, Balance Sheet showing receipts amounting to £295 10s. 10d., and disbursements of £201 19s. 7d., leaving a Balance to the Credit of the Society of £93 11s. 3d.

The following gentlemen were elected Members of the Council for 1878:—

President—W. J. STEPHENS, Esq., M.A.
Vice-President—THE HON. SIR WILLIAM MACARTHUR, M.L.C.
Hon. Secretary—COMMANDER STACKHOUSE, R.N.
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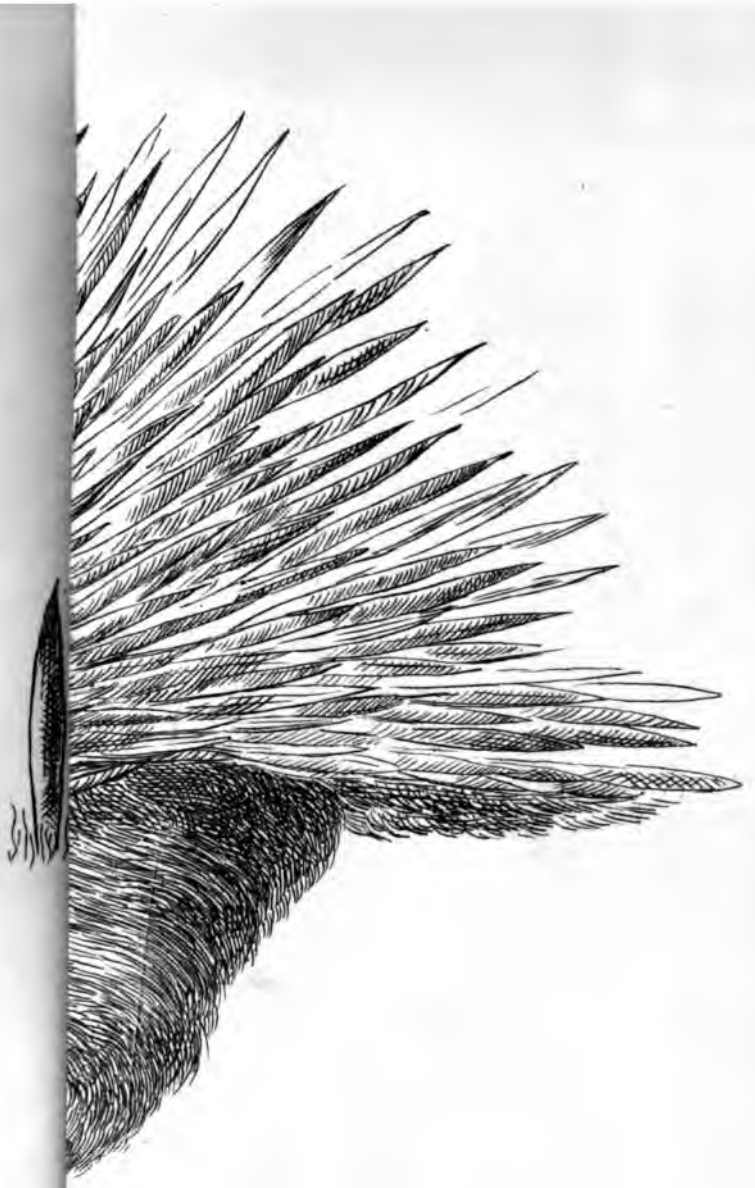

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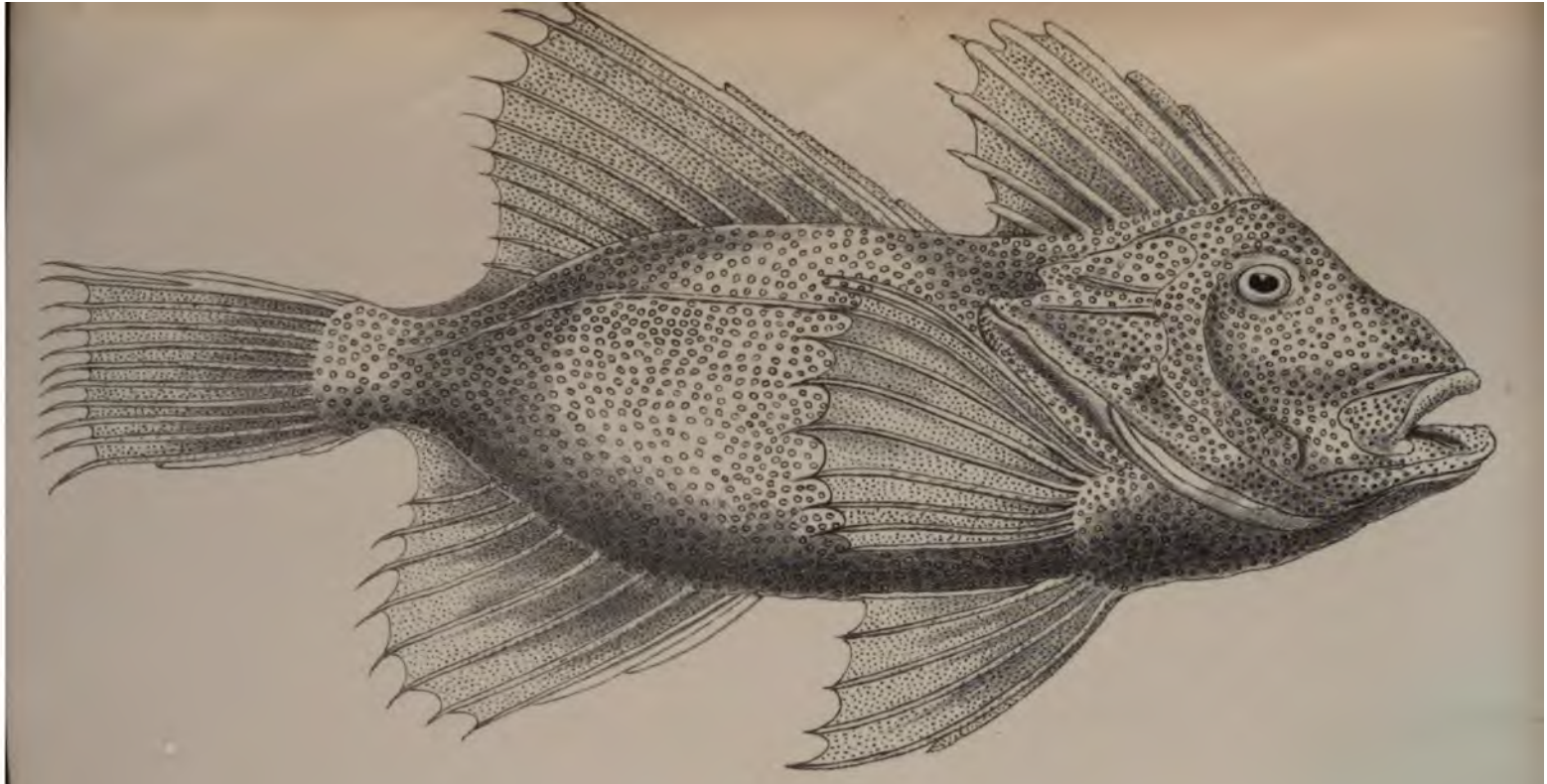
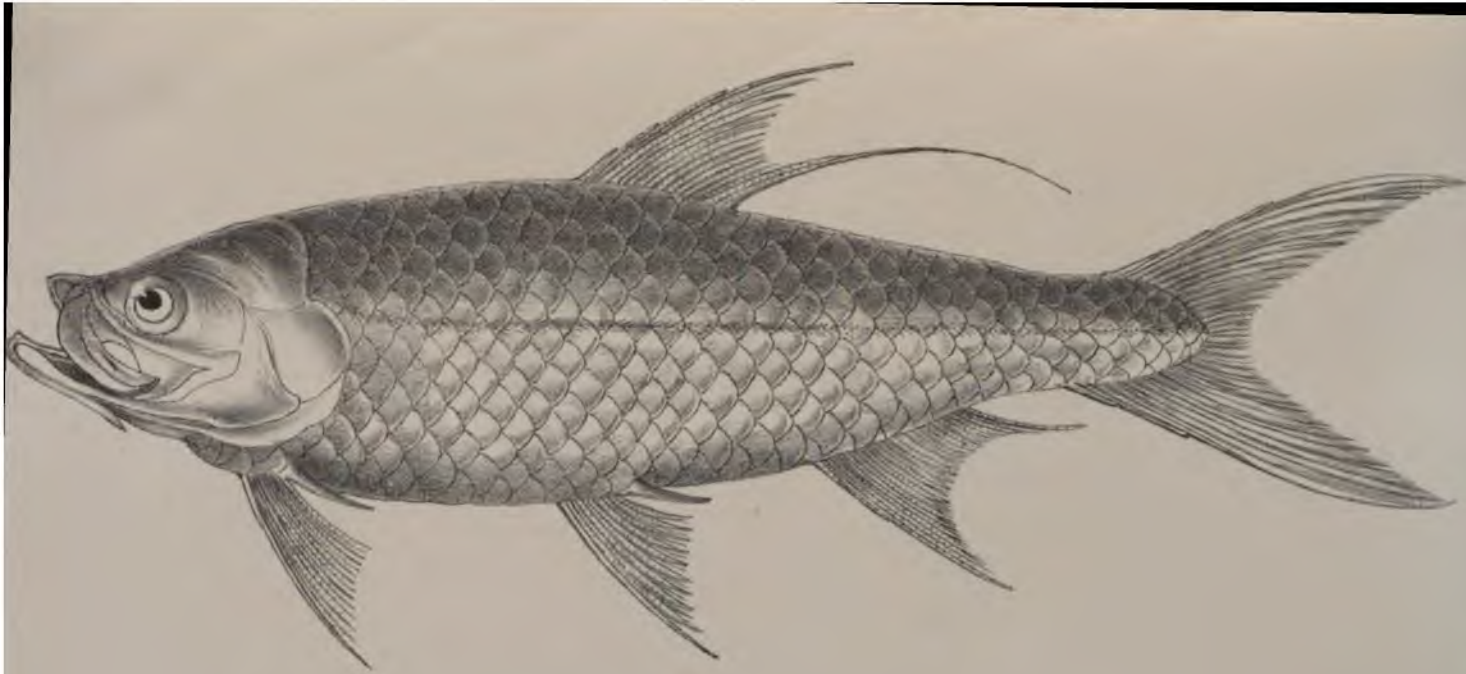


Baridia flava *Casteln.*



Brisbania staigeri. *Casteln.*

½ Nat. size.

Fig. 1. A.

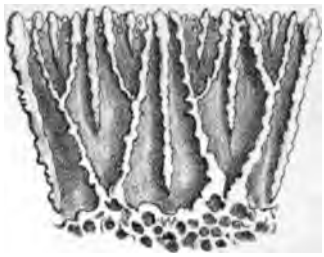
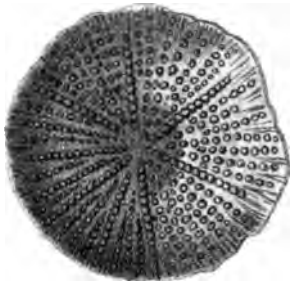


Fig. 4.



C.

B.

Fig. 3.

A.

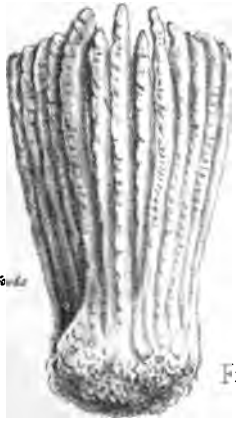


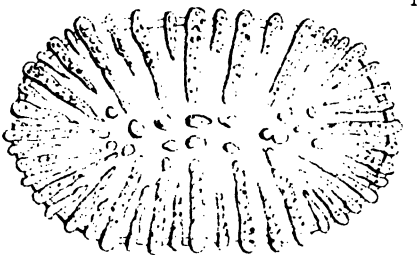
Fig. 1. C.

Fig. 1. B.

Fig. 2.

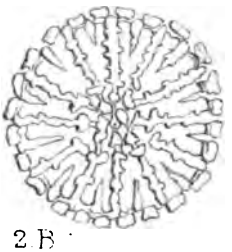
Fig. 1. Sphenotrochus excavatus, A Calice, B. Septum, C. Coral (All much enlar
Fig. 2. Flabellum irregulare (natural size)
Fig. 3 Cylicia magna, A and B. Corals (natural size) C Calice (enlarged).
Fig. 4. Balanophyllia buccina (one system enlarged).

Fig 1 A



1 B

2 A



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3 A

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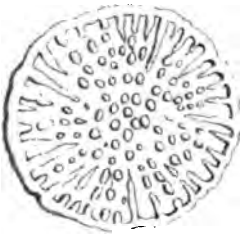

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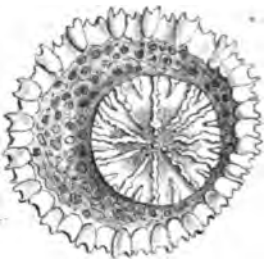

4 A

4 B

5 A

5 B

5 C

5 D

Fig 1. Conocyathus compressus, A. Coral, B Calice (both enlarged).
Fig 2. Deltocyathus rotæformis A Coral, B Calice, (both enlarged).
Fig 3. Cylicia quinaria, A. Coral. B Calice, C, D. E, Septa (All enlarged).
Fig 4. Dunocyathus parasiticus. A Calice (enlarged) B. Lunulite (enlarged)
Fig 5. Balanophyllia buccina, A. and B. Two Corals. C and D. Front & side view

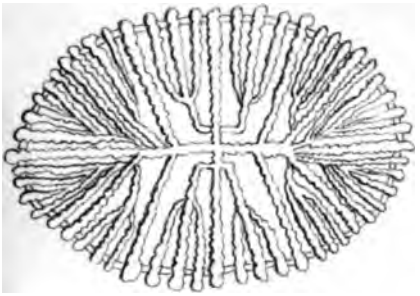

Fig 1c

1b

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Fig. 2a

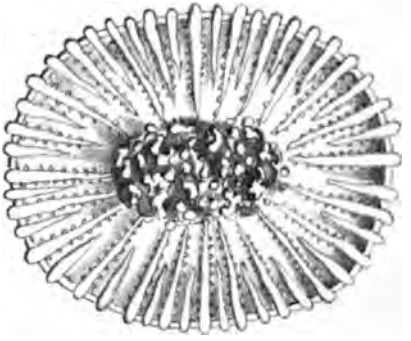


Fig. 2b

Fig 2c

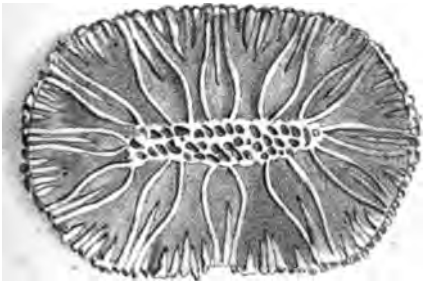


Fig. 3b

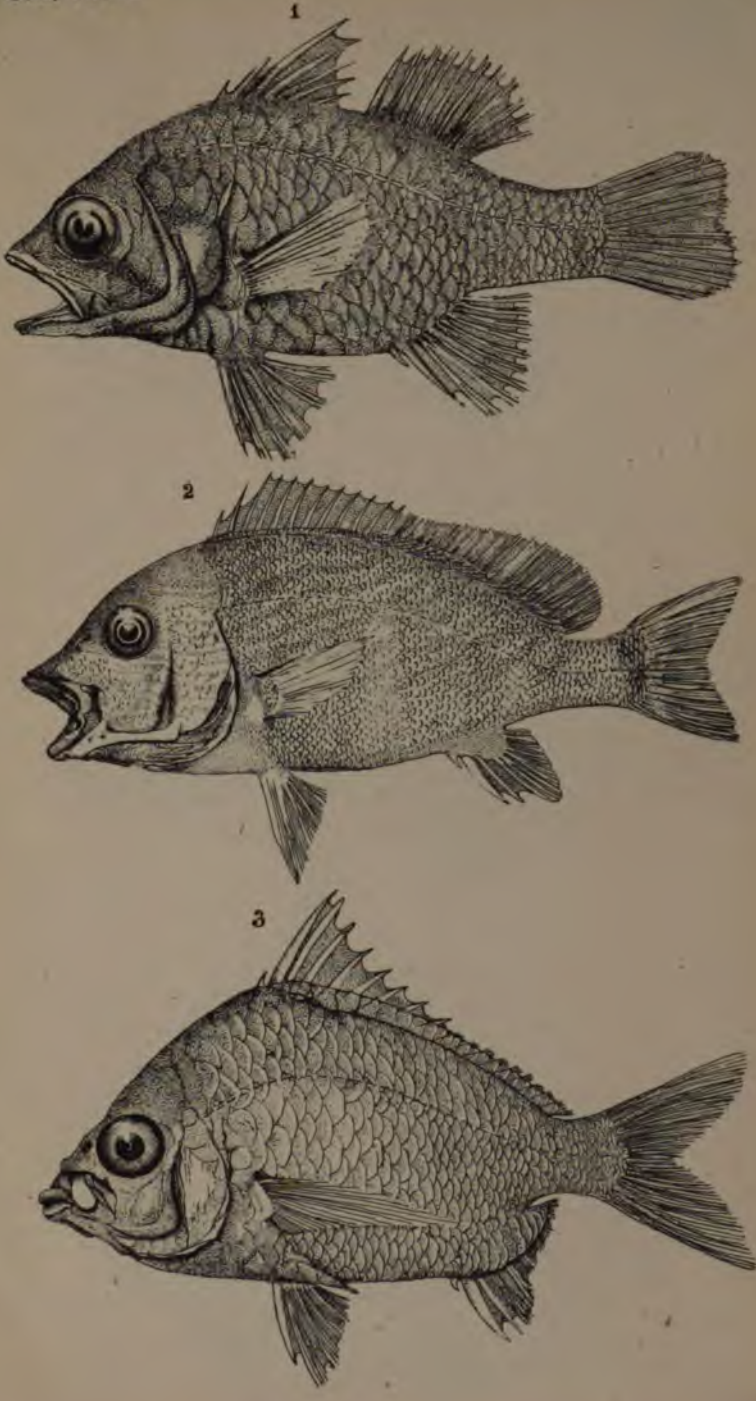
Fig 3a

Tenison Woods, Delt. S.T. Leigh & Co.

Fig 1. Endopachys Australiæ, a. and b. Coral (natural size) c Calice (magnified)

Fig 2 Crispatotrochus inornatus, a Coral (slightly enlarged) b. Calice c Costæ *much enlarged*).

Fig 3. *Heteropsammia* elliptica a Coral. natural size. b Calice. (enlarged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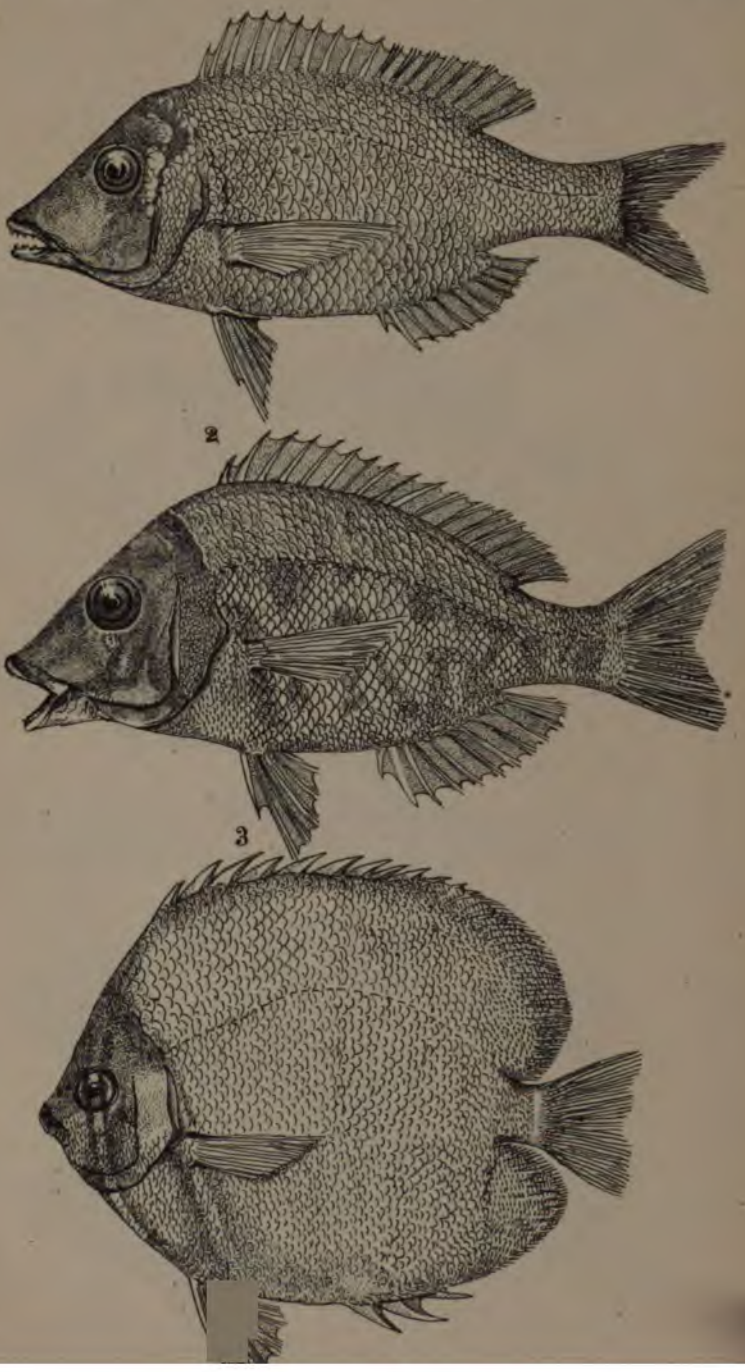
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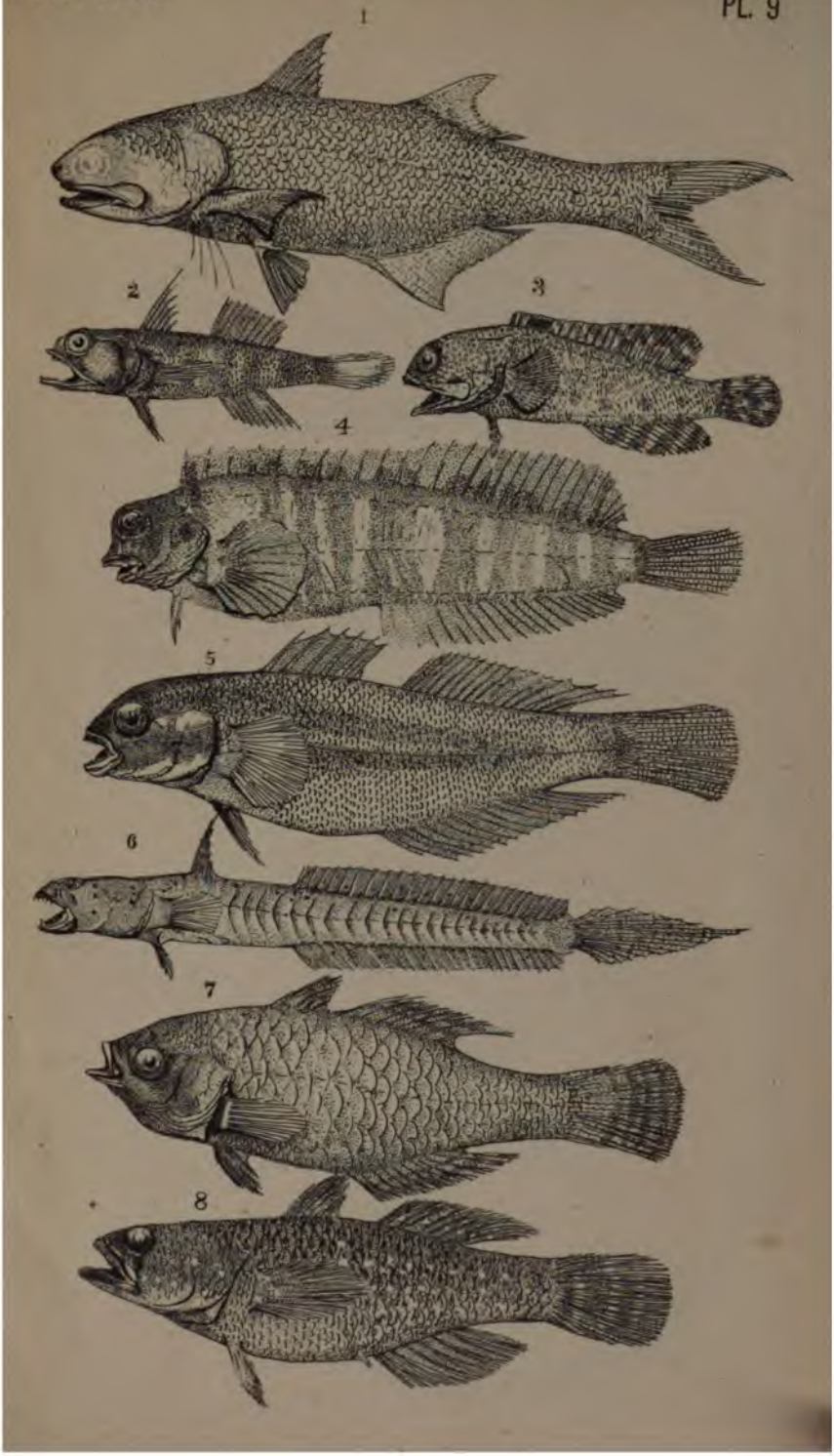
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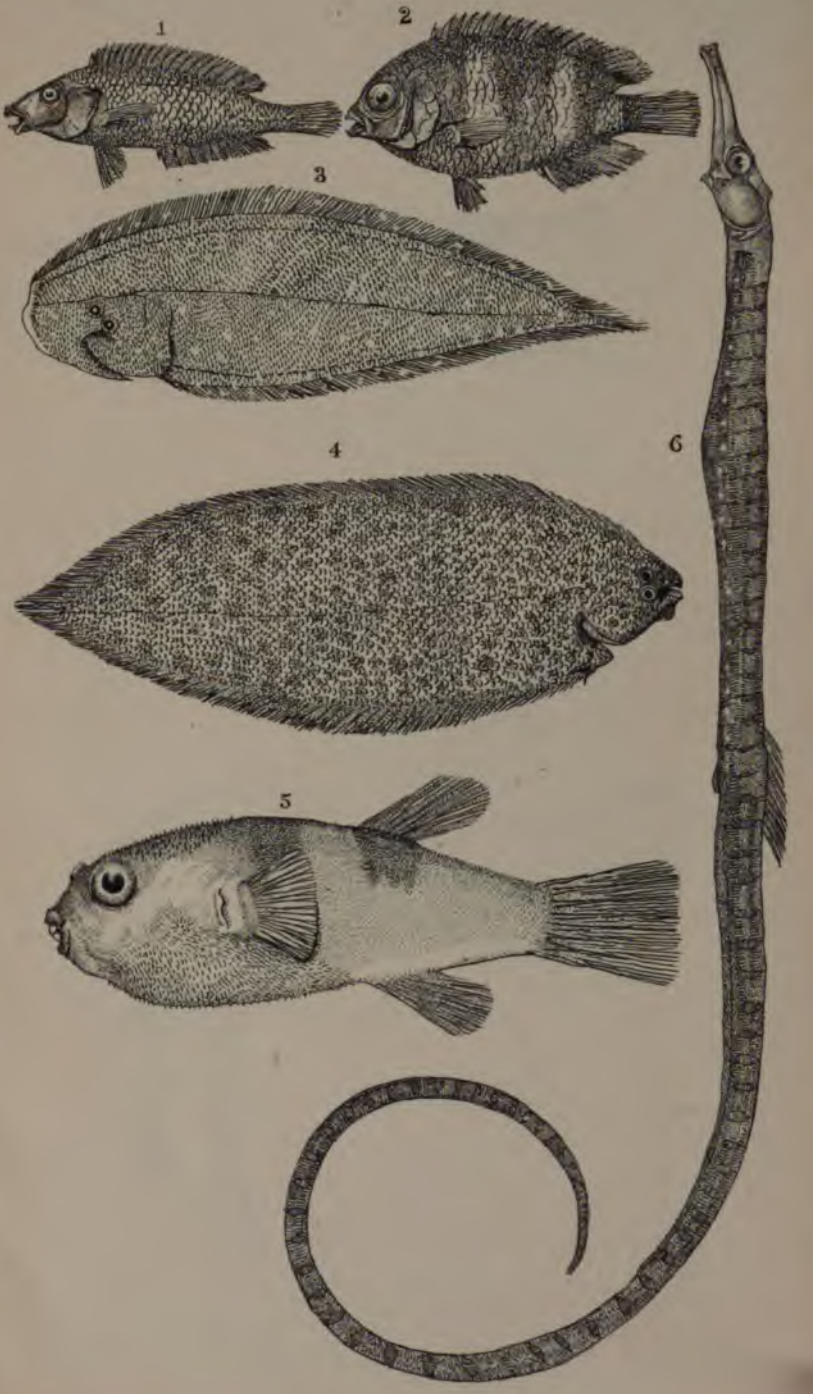
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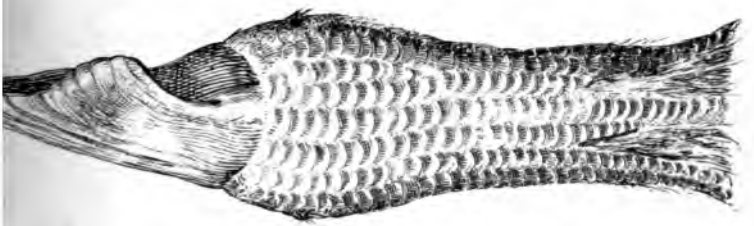

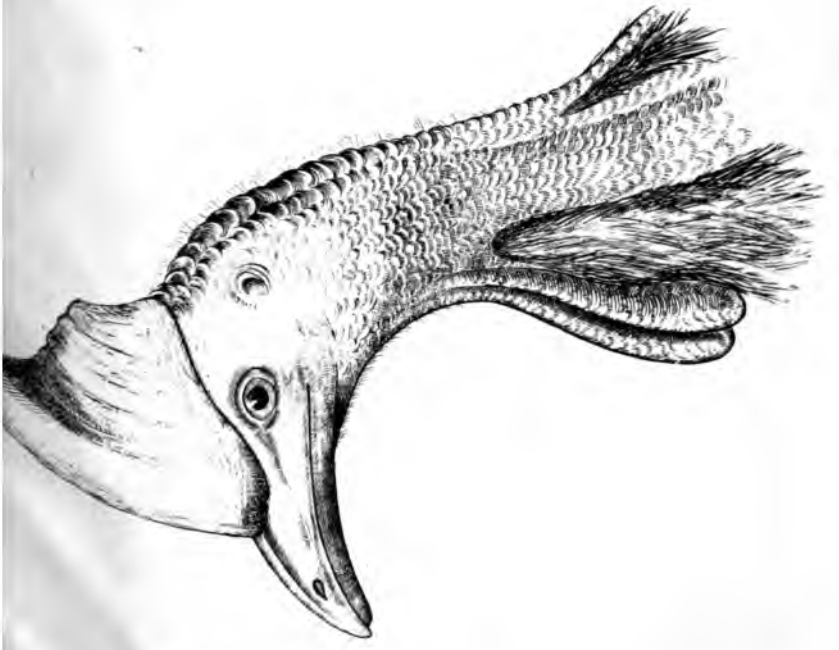

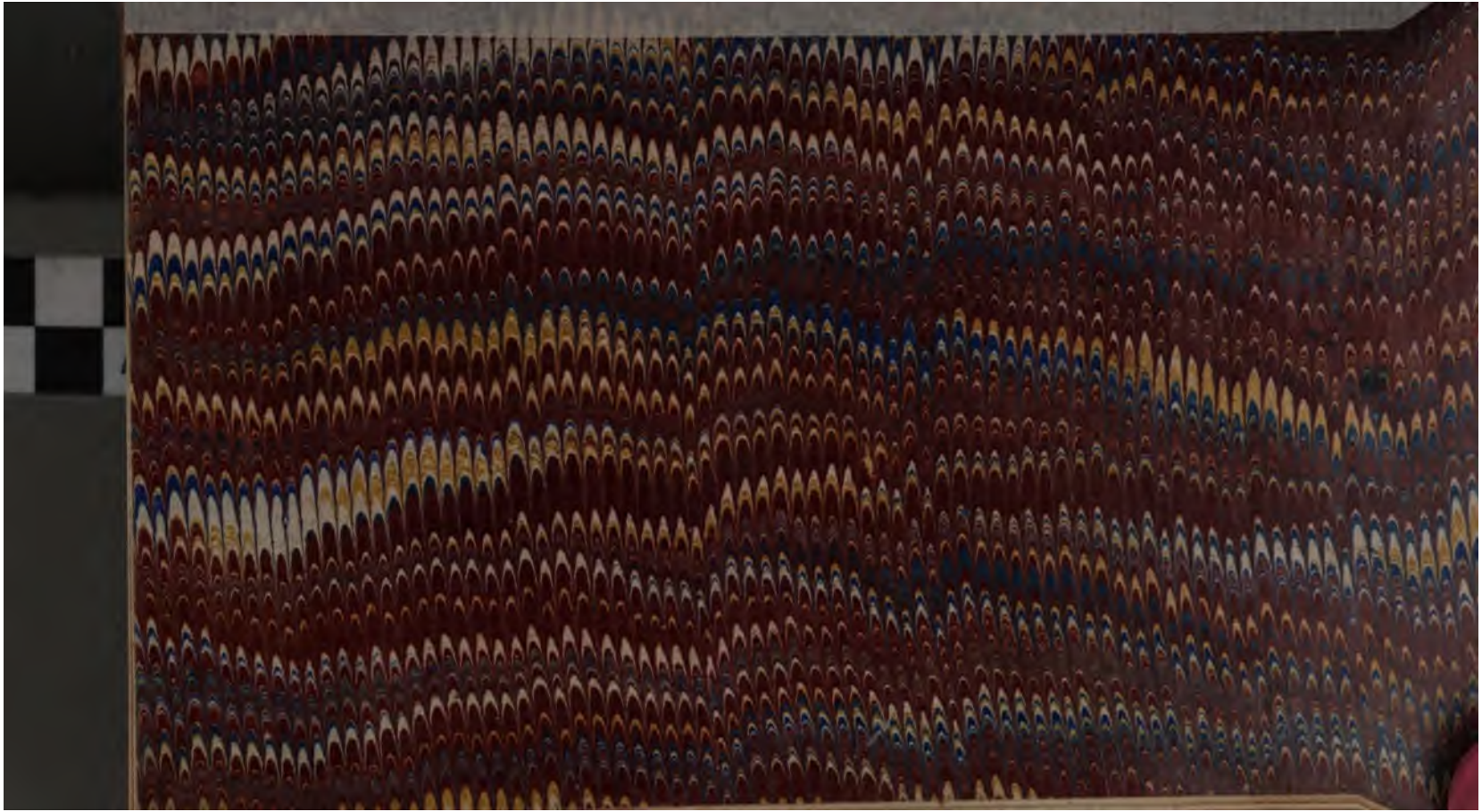

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